B 573848

JANUARY, 1956

WOOD WORKING Digest

A HITCHCOCK PUBLICATION

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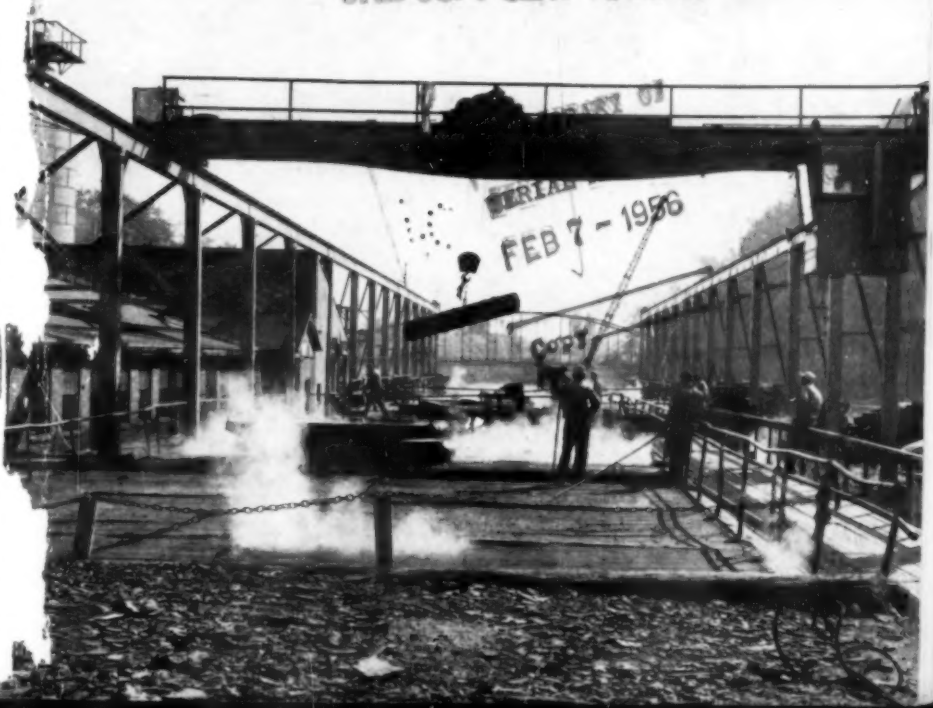


FEB 7 - 1956

Another reason why...

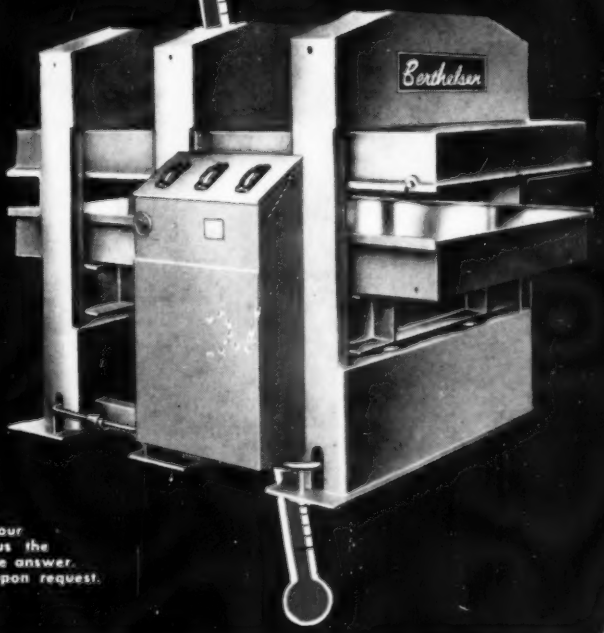
BERTHELSEN PRESSES *are better...*

UNIFORM PLATEN TEMPERATURES

The uniform platen temperatures, controllable from the lowest to the highest, benefits the *BERTHELSEN PRESS* user in many ways.

1. *No steam is formed in the glue line to cause blisters upon release of platen pressure.*
2. *Shorter curing cycles resulting in greater production per press opening.*
3. *Elimination of rejects due to face checking and splitting from excessive moisture removal.*
4. *Progressive glueing of stock without danger of overlap marks.*

To insure control of the variable factors affecting quality and rate of production in your pressing operations consult with BERTHELSEN ENGINEERS.



Berthelsen Engineers are available at no obligation for consultation on your pressing problems. Give us the facts and we'll give you the answer. Descriptive literature free upon request.

BERTHELSEN PRESSES

P. O. BOX 1423 • LOCKPORT ROAD • JOLIET,

Reproduced from poor material

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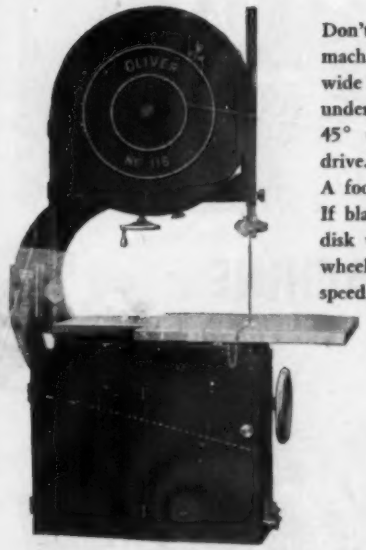
OLIVER 38 in. Band Saw speeds work through the machine room



Don't let size and variety of band saw work slow up your machine room! The Oliver 38-inch Band Saw handles a wide range of work smoothly and rapidly. Takes 21½" under guide, 38" between saw and column. Table tilts 45° to right, 5° to left. Motor-on-shaft or belted-motor drive. Frictionless saw guides have durable carbide jaws. A foot-lever cuts current and stops wheels in a few seconds. If blade breaks, upper wheel stops automatically. Has ring-disk wheels—the finest made. These light, strong, balanced wheels run true and smooth without vibration at highest speeds.

Power-Feed Unit—feeds 80' a minute. This unit can be attached to your present Band Saw.

Cut two or more boards out of one with this Band Resaw

The Oliver Band Saw with Resaw rips with power feed 10' to 20' a minute, stock up to 17¾" wide, 8" thick. The Resaw attachment can be quickly swung aside. If you resaw your boards to desired thickness instead of planing them, you'll save considerable lumber.

Write for Bulletins on this 38-inch Band Saw and Resaw. Also for Bulletins on Oliver 18", 20", 36" Band Saws.

OLIVER MACHINERY COMPANY

Established 1890 **GRAND RAPIDS 2, MICHIGAN**

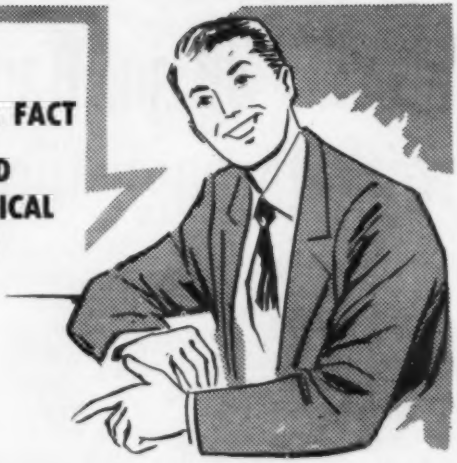
IT'S A **FACT!!**

AN ENGINEERING FACT

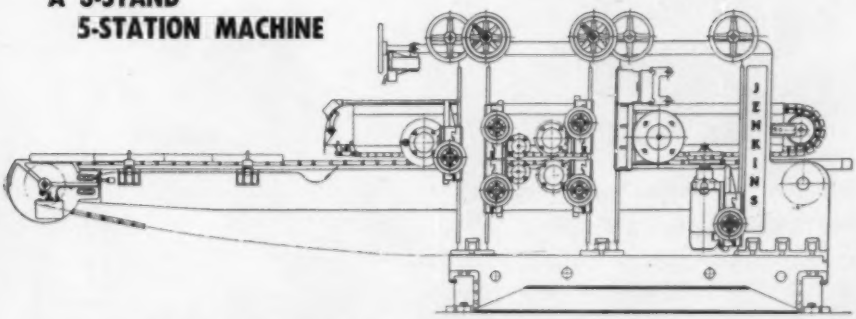
NO OTHER DOUBLE END MACHINE HAS THE TECHNICAL ADVANTAGES OF THE

Jenkins

MODEL 193 DOUBLE END MULTI-PURPOSE MACHINE



A 3-STAND 5-STATION MACHINE



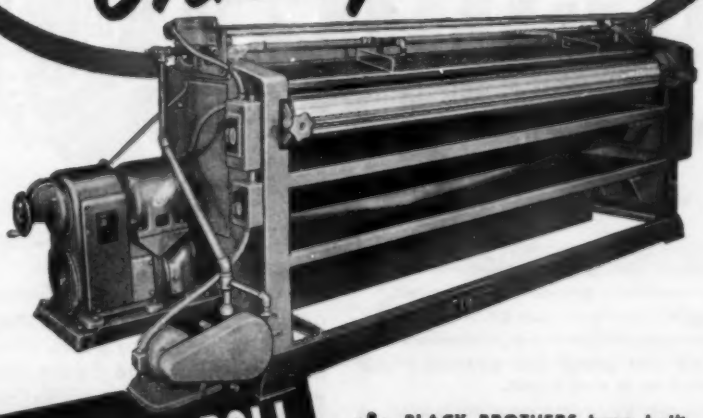
Designed for complex, high speed, Multiple Double End Edging, Double Surface Grooving, Texturing, and many others, this is the most complete, high speed, precision Double End Machine ever built.

With such improvements as the Vari-Speed Drive and the New Feed Shaft Position, TRIMMING, MULTIPLE SLITTING, SHIPLAPPING, AND GROOVING are done at speeds as high as 164'/minute, with maximum precision.

All this and conventional double end operations too.

JENKINS WOODWORKING DIVISION OF *CURT G. JOA INC.* SHEBOYGAN FALLS, WISCONSIN

High Production Glue Spreaders



RESILIENT ROLL BALL BEARING GLUE SPREADER

✻ **BLACK BROTHERS have built more resilient roll glue spreaders during the past fifteen years than all other manufacturers.**

Unmatched in speed, economy, accuracy, cleanliness and quality production . . . the No. 22D Ball Bearing, Resilient Roll Spreader is by far the finest glue spreader available for resins, caseins, and other cold glues. Gluing rolls are deeply covered with the fine synthetic rubber, and are specially grooved to control the amount of glue deposited and to conform to irregularities in the stock. Water cooled doctor rolls are available for use with quick setting glues. Accurate, heavy duty ball bearings are sealed to keep lubricants in, and dirt and glue out. Doctor rolls are heavily *coated* with a highly polished, nonferrous surface to accurately control the glue spread. Investigate the 22D Spreader today . . . write for supplement to Bulletin 11-A.

"If It Is Gluing Equipment — We Have It"

THE BLACK BROTHERS CO., INC.

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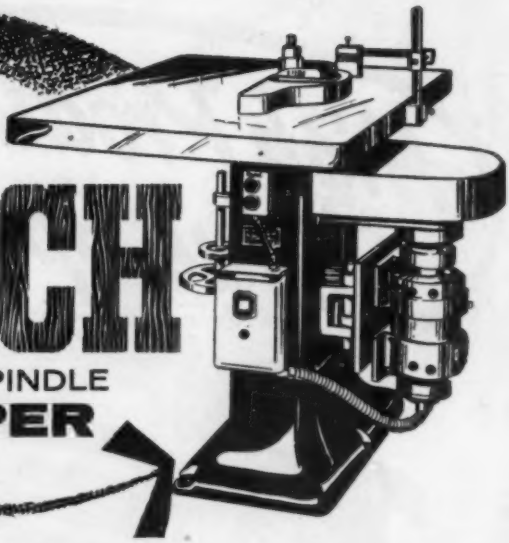
SPECIFY

BEACH

SINGLE SPINDLE

SHAPER



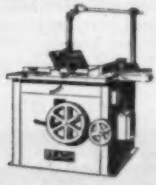
- **furnished with a solid spindle 1" diameter, accurately ground and balanced.**
- **complete set of knife and fill-in collars furnished; special spindles available on order.**
- **spindle and motor can be raised and lowered as a single unit.**
- **heavy cast iron table carefully machined and finished to give best possible working surface. Available in two sizes: Standard —30x40" with 15" clear in front of spindle; 24x40" with 13" clear in front of spindle.**

The Beach Single Spindle Shaper is adapted for all types of shaping and is built to give years of care-free operation. The Beach Shaper embodies several features not to be found on other machines of this type. Can be furnished with any type electric motor, from 1 H.P. to 5 H.P.

WRITE TODAY for complete information and specifications on the Beach Single Spindle Shaper!

DOUBLE CUT-OFF SAW

HAND BLOCK BELT SANDER



TILTING ARBOR SAW

TILTING TABLE SAW

BEACH

MANUFACTURING CO.

MONTROSE, PA.

January, 1956
Vol. 58 No. 1
Published Monthly

WOOD WORKING Digest

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COVER PICTURE:
From "Out of the Forest," page 152.

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A quarter-century of **COMET QUALITY** is reflected in this radial arm saw that has set unbeatable production records. Power (2-3-5-7½ HP), capacity, ease of operation, accuracy, versatility and safety are reasons it's the buy of a lifetime.

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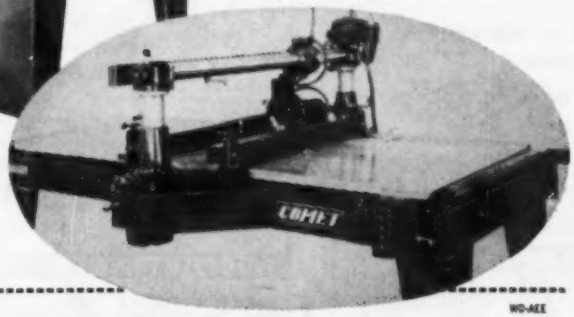

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Saves Time and Dollars - Reduces Inventory

HIGH PRODUCTION: With unskilled labor this High Frequency Press will produce as much as 15,000 board feet of edge glued panel stock per working shift. Through this tremendous yield of top quality panel or structural lumber, the press quickly pays for itself and provides substantial profits thereafter. Then too, work-in-process inventories are reduced thus freeing capital for other uses.

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The results of tests conducted by Elmendorf Research Inc. on polyvinyl resin adhesives is important reading for anyone interested in better, faster wood bonds. A report on these findings is available upon request. Write to Swift & Company or to Elmendorf Research Inc., 322 West Washington, Chicago 6, Ill.

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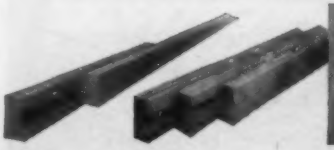

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Exclusive
Orbital
Action!
Blade moves *ahead* on upward cutting stroke — moves *back* 3/64" on downward relief stroke. No harmful "drag" — blades run cooler, last far longer — cutting speeds increase up to 4 times!

New! Just $99.50!

World's only orbital-action bayonet saw!

Now—the first *real* improvement since portable jig saws were invented! It's Porter-Cable's revolutionary new Model 148—designed around a wholly new principle, *guaranteed to outperform any other portable jig saw at any price.*

Orbital action makes the difference. Blade teeth are in contact *only* on the cutting stroke—*back away* on the relief stroke. Harmful "drag" is completely gone—and performance reaches a new high.

By actual test, the Model 148 cuts up to 4 times faster than the best conventional up-and-down saws. It has a full 2" capacity in wood—¾" in aluminum, ¼" in steel. Its cool, comfortable grip and perfect balance make easy work of any job. Get the whole amazing story from your Porter-Cable dealer—or write today for full information.

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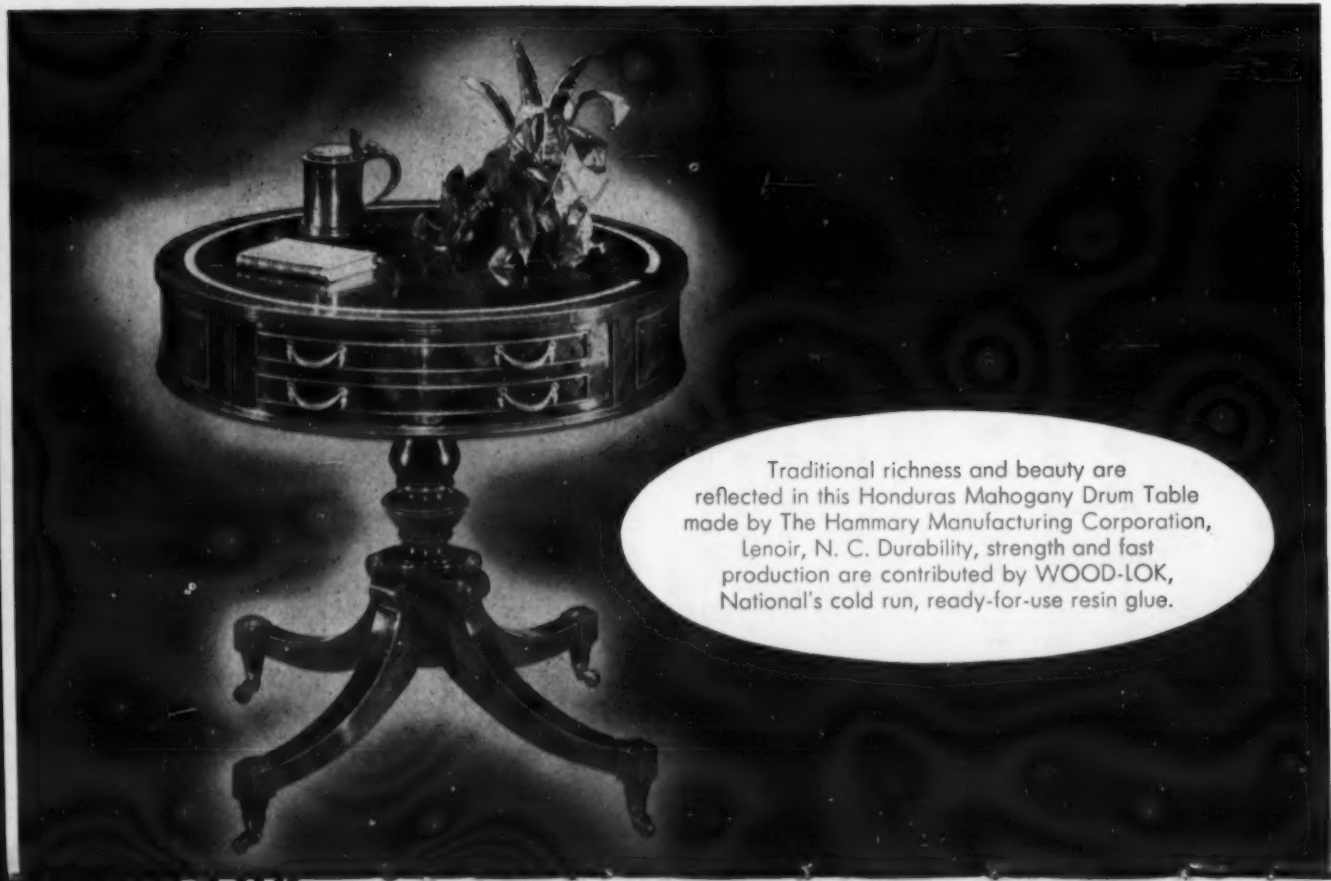
Canadian prices slightly higher.

AT THE HAMMARY FACTORY IN LENOIR N.C.



Traditional richness and beauty are reflected in this Honduras Mahogany Drum Table made by The Hammary Manufacturing Corporation, Lenoir, N. C. Durability, strength and fast production are contributed by WOOD-LOK, National's cold run, ready-for-use resin glue.

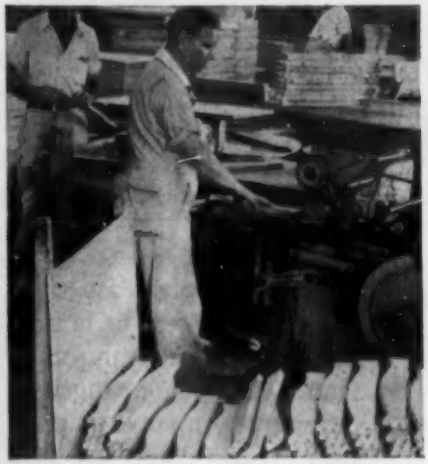
WOOD-LOK modernizes traditional methods

WOOD-LOK modernizes traditional methods

STRONGER GLUING Wood-Lok strengthens dowel joints with the strongest bond of any adhesive. Dowel driver operation is heatless, with no nightly cleanup.

GREATER DURABILITY Wood-Lok adds durability by increasing shock resistance of blocked joints. Other advantages: no chilled joints, noncrazing glue lines.

FASTER MACHINING Wood-Lok joints are machinable the same day—and virtually nonabrasive to lathe knives. Clamp-time: 40 min. Open assembly-time: 5-7 min.



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SPECIAL OFFER! Write for 5 gallons of WOOD-LOK and a complimentary glue applicator—on a trial and approval basis.

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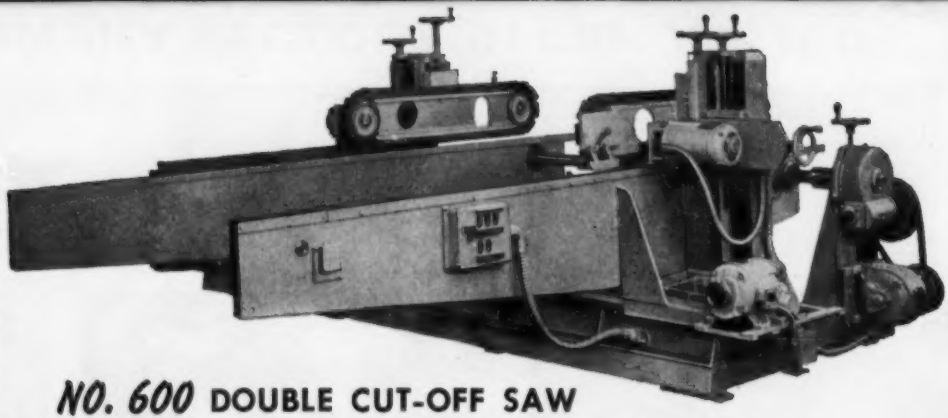
These new Mereen-Johnson double end machines are priced well within reach of most furniture, sash and door and allied plants. They have the quality and workmanship of the heavy duty units but, through the elimination of less essential features, are *much lower in price.*



NO. 600 DOUBLE CUT-OFF SAW

Available with trims only; or with tilting cope motors and stationary dado arbor. Special attachments are available as optional equipment.

TWO NEW MEREEN-JOHNSON DOUBLE END MACHINES . . .

priced right for small and medium sized plants

NO. 700 DOUBLE END TENONER

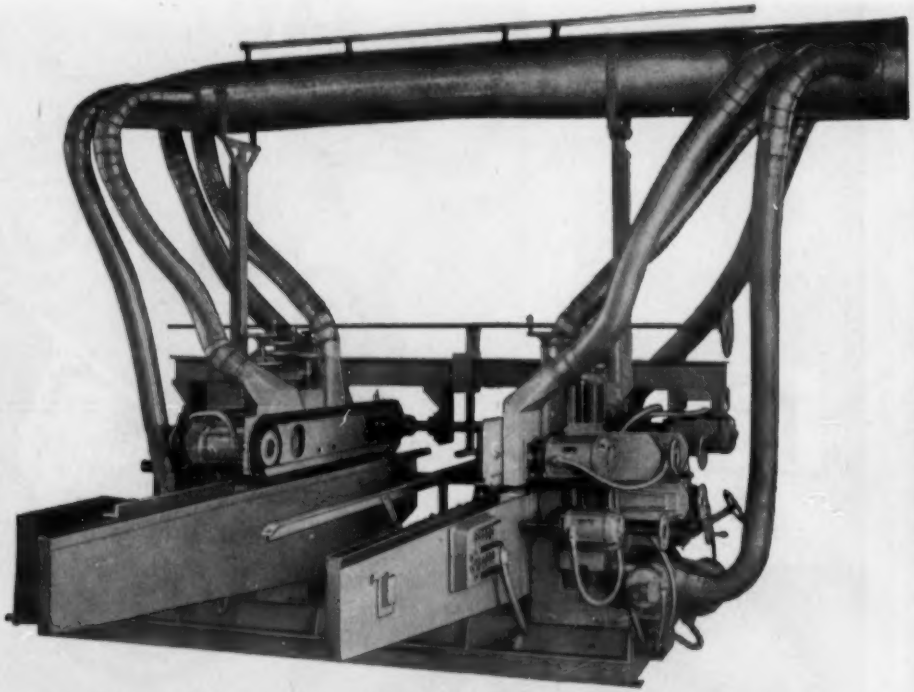
Comes standard with trim, tenon and cope motors. Can be furnished with overhead dado arbor and scoring saws.

The basic construction for both machines includes a

Comes standard with trim, tenon and cope motors. Can be furnished with overhead dado arbor and scoring saws.

The basic construction for both machines includes a welded steel base, chain beams and hold-downs. More compact, they afford easy access to adjustments—minimizing shutdown time for set-up changes. Both units are fully motorized and are completely modern in every respect.

For complete specifications, write for illustrated bulletin No. 600-700



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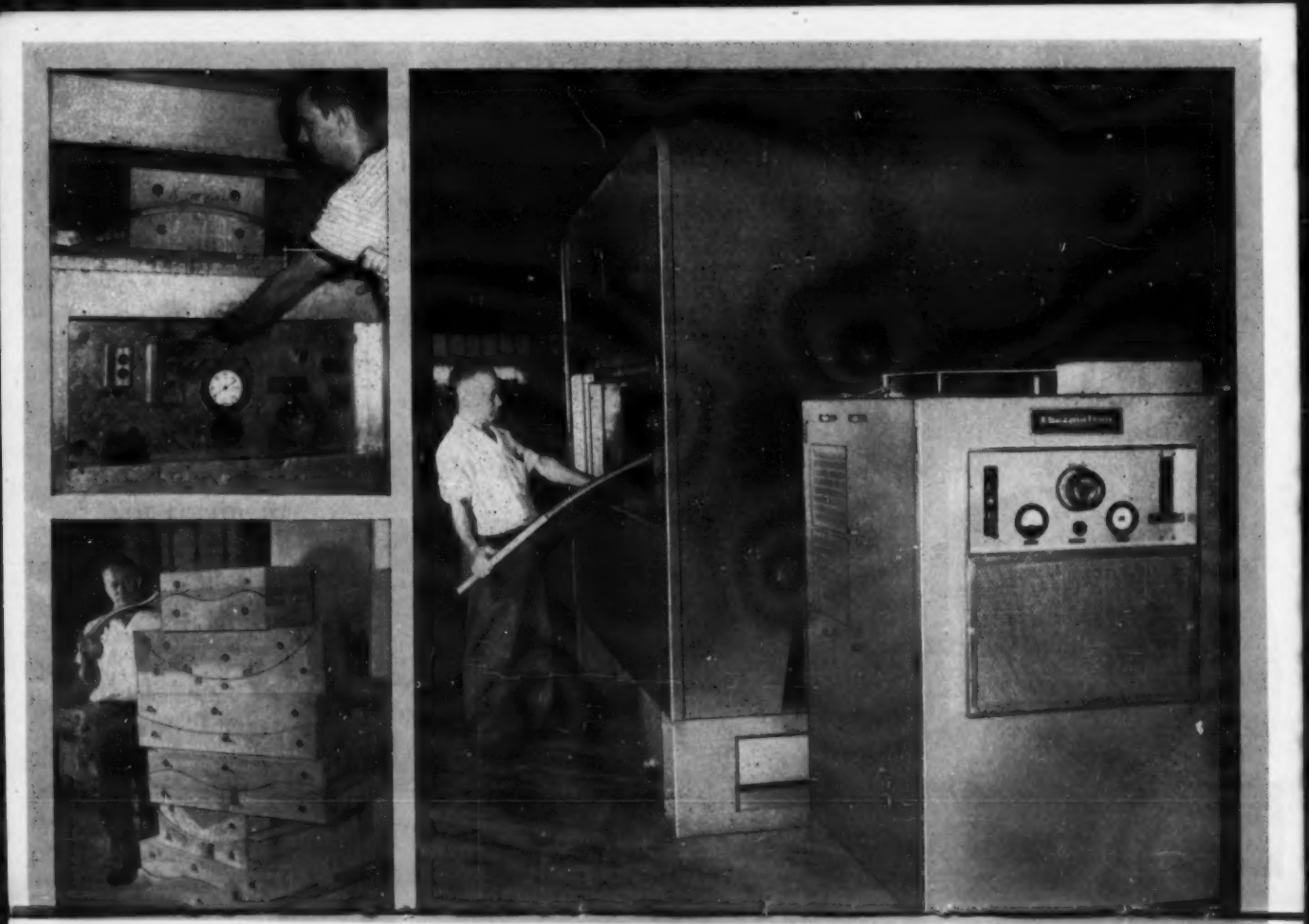
CUT-OFF SAWS	DOUBLE CUT-OFF SAWS	MULTIPLE CUT-OFF SAWS	GANG RIP SAWS
TENONERS	VENEER & PLYWOOD SIZERS & JOINTERS		RESAWS



New Pennsylvania Furniture Co. bends and

Now Pennsylvania Furniture Co. bends and laminates fine veneer serpentine fronts in a fraction of the former time with THERMATRON

The old method of gluing in a cold press used to require almost three hours, but the THERMATRON high frequency installation in Pennsylvania Furniture Co.'s York, Pa. plant has created a revolution! Using the 15 KW output THERMATRON generator and 225 ton plywood forming press illustrated, as many as several layups of six to ten pieces of veneer are precision bent and laminated at once over their inexpensive hardwood moulds . . . And the time cycle is no more than 2¾ *minutes*. Other than loading, it's a push-button operation throughout, with no special skills required.

We'd like to survey *your* present operation. We can prove that THERMATRON high frequency equipment will do a superior job while it slashes away at costs. Frees large drying areas for more profitable purposes, too. Write or phone us now without obligation — And ask for our latest bulletin WD-54

Thermatron Division

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HIGH FREQUENCY SEALING AND HEATING EQUIPMENT

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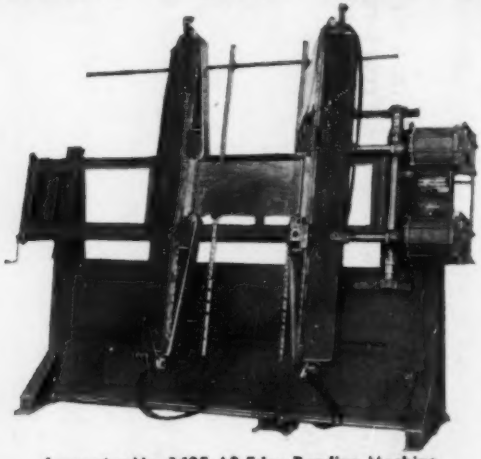
QUALITY EDGE BANDING
WITH SPEED AND DEPENDABILITY!



Lancaster No. 1425-A3 Edge Banding Machine

Here is an Edge Banding Machine with resistance heating which will give you high production quality work; thereby, saving you many dollars compared to using many conventional Edge Banding Machines.

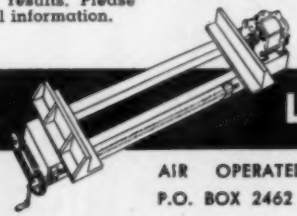
Our machine will band straight work up to a maximum of 3" thick, 80" wide and 80" long and round corner work up to a maximum size of 3" thick, 56" wide and 80" long. The No. 1425-A3 requires little floor space as it is constructed so that jaws form an easel with a 15° slant. This construction gives your operator every advantage for ease of operation. We have provided several sets of work support pins which can be used at any point along face of jaws. This will allow you to band several small or narrow tops at one loading. When banding thin tops you can place tops in machine in two layers by using spacer strips. The average time required for single ply veneer is 1 to 1½ minutes, for double ply veneer the time is 1½ to 2 minutes at 225° Fahrenheit.

Our present users are receiving outstanding results from the LANCASTER EDGE BANDING MACHINE. We would like for you to get these same outstanding results. Please write for full information.

The Lancaster No. 260-B Glue Spreader is built to provide smooth trouble free performance. Its simple sturdy construction combined with the ability to produce a uniform regulated spread of glue is a great contribution to your edge banding operation. This machine will produce glued bands faster than most methods without getting undesirable glue on the face side of veneer.

Lancaster No. 260-B Motor Driven Edge Banding Glue Spreader.

We would like to send you further information on this equipment.



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P.O. BOX 2462 • GREENSBORO, N. C.

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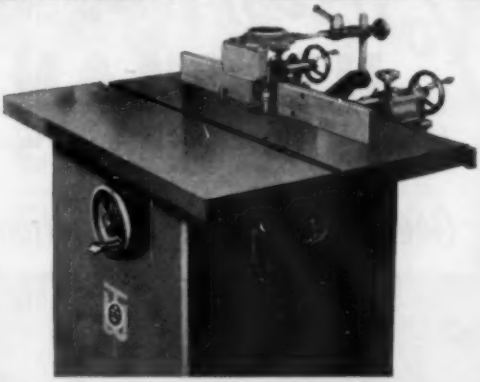
Interchangeable spindles cut set-up time way down!



Every feature of this new Walker-Turner "Light-Heavyweight" *2-Speed Vertical Spindle Shaper* has been designed to save you time and money. You can leave multiple cutter set-ups right on the spindle — and change the spindle in a matter of two minutes when you're changing cutting jobs. The big, clean work surface makes every job easier. Guides are independently adjustable by separate handwheels — can be easily removed when working with templates or guide pins.

Specifications: Takes W-T ¾" bore cutters, or ½" and ⅝" bore with adapters furnished . . . Spindle travels 3" on dovetailed ways; gibbed for adjustment and to take up any wear . . . Table is 22" x 33", with milled ¾" slot for miter gauge . . . Available with 1 hp single-phase or 1½ hp 3-phase motor, with big overload capacity . . . Cutter is completely guarded.

The rugged spindle is mounted on dust-sealed ball bearings 10" apart — this eliminates spindle whip. Spindle has two speeds: 7,000 and 11,000 rpm, giving you the correct speeds for different sized cutters.

Ask your W-T Distributor to *demonstrate*. He's listed under "Tools" in your phone book's Yellow Pages. Or write for his name and full specifications.

DRILL PRESSES, HAND AND POWER FEED — AIR FEED DRILL PRESS ATTACHMENT
RADIAL DRILLS — WOOD AND METAL CUTTING BAND SAWS — TILTING ARBOR SAWS
RADIAL SAWS — JIG SAWS — CUT-OFF SAWS — LATHES — SPINDLE SHAPERS
JOINTERS — BELT AND DISC SURFACERS — FLEXIBLE SHAFT MACHINES

walker-Turner

WALKER-TURNER
Division
Kearney And Trecker Corporation • Plainfield, N. J.

IF YOU WANT BETTER FINISH...
LESS WASTE... MORE ACCURACY...
HIGHER PROFITS...

You'll want NEWMAN MACHINES

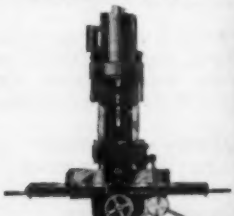
Geared to YOUR production

S—824 SINGLE SURFACER

K-16 VARIETY SAW

G-232 HYDRAULIC KNIFE GRINDER

T-20 MORTISER

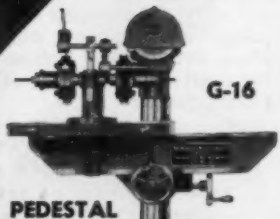


The machines shown here are but a few of those manufactured in our big new modern plant which turns out a full line of up-to-the-minute woodworking machinery. Our staff of design engineers constantly seek newer, finer techniques and quality controls. All moving parts — shafts, pulleys, heads are dynetrically balanced for smooth vibration-free service and long productive life. Full details of any Newman Machine is yours on request.

— — Write today — —

Remember you'll always get more profit dollars from Newman Machines

— — Geared to your production.



G-16 PEDESTAL TYPE HEAD GRINDER

Newman

MACHINE CO., INC.

GREENSBORO, NORTH CAROLINA, U. S. A.

Black & Decker® Bench Grinders are POWER-BUILT to last!

We don't buy motors—we build them!

The *heart* of your electric tool is the motor—completely built by Black & Decker! All the power you need and then some—because each motor is built for a specific tool and the job it must do. B&D motors always *stand up!*

SERVICE!

One of 42 B&D service branches is located "next door" to you; to give fast, expert service!

Keep your tools in shape for maximum shop out-put with a Black & Decker Bench Grinder. Each grinder is powered by a specially designed B&D-built, constant-speed motor. Lubricant-sealed bearings. Maximum wheel clearance. Switch protected. Adjustable tool rests. 6″ to 10″ wheel sizes. Perfect for the finest tool dressing, grinding, wire brushing, burnishing or buffing. See your B&D distributor today for a demonstration or write to: THE BLACK & DECKER MFG. Co., Dept. 2701, Towson 4, Maryland.

SCREW DRIVERS

SANDERS

DRILLS

GLUE POTS

VACUUM CLEANER

Look in the Yellow Pages under "TOOLS-ELECTRIC"

Black & Decker®

Portable Electric Tools

Shown above are a few of the many specialties made of vulcanized fibre and laminated phenolic by the Penn Fibre & Specialty Co.

"The FOLEY SAW FILER saves us $20 to $30 per month"

William K. Davis,
PENN FIBRE & SPECIALTY CO.
Philadelphia, Penn.

In manufacturing their products, Penn Fibre & Specialty Co. is constantly cutting vulcanized fibre and Bakelite. Says Mr. Davis—"vulcanized fibre is hard on saws, which require frequent sharpening and setting. We find a Foley Saw Filer in our own plant is more convenient, saves 'down-time', cuts our saw sharpening costs and enables us to own fewer saws. Anyone can learn to use the Filer. We have realized savings of $20 to $30 a month since installing the Foley Saw Filer."

FOLEY SAW FILER OPERATING DATA

Materials cut	Vulcanized Fibre, Bakelite in thicknesses from 5/1000" to 1½"
Foley Saw Filer used for	2 years
Average weekly use	4 hours
Number of operators	Two
Previous experience	None
Saws filed	about 4 dozen band saws ⅜" to 1" wide, 18' long 6 circular saws 10" to 12" diam.
Previous saw filing method	Custom filing by outside shop

FOLEY MFG. CO. 3351 N.E. 5th St., Minneapolis 18, Minn.

Please send Free Book giving reports by users and your 30-DAY TRIAL OFFER on the Foley Saw Filer.

Name .....

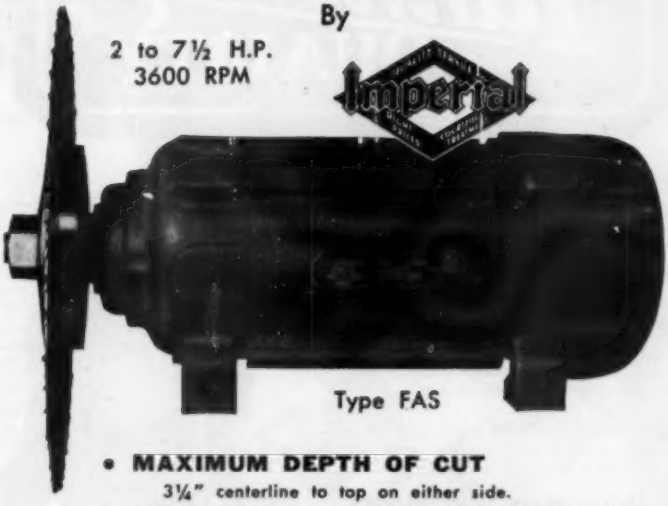
Address .....

City ..... State .....

Precision
MOTOR ARBORS

By

2 to 7½ H.P.
3600 RPM



Type FAS

- **MAXIMUM DEPTH OF CUT**
  3¼" centerline to top on either side.
- **ABSOLUTE RIGIDITY OF ARBOR**
  Massive arbor extension up to 2" dia.
- **SMOOTH CUTTING**
  Taper-mounted saw-flange and no end-play of arbor.
- **LOW OPERATING TEMPERATURE**
  Laminated stator-core directly exposed to cooling air stream.
- **DUST-PROOF**
  Totally-enclosed, fan-cooled construction.
- **SELF-CLEANING**
  No covers or other dust traps.
- **NO MAINTENANCE**
  Sealed ball-bearing prelubricated for life.
- **FIRE PROTECTION**
  Non-sparking fan and fan-cover.

Send for Bulletin No. S-51 to Dept. 6

THE IMPERIAL ELECTRIC COMPANY

Main Office AKRON, OHIO · Factories in AKRON & MIDDLEPORT, OHIO

Tannewitz QUALITY

NO OTHER BAND SAW EMBODIES SO MANY DESIRABLE FEATURES!

PERFECTLY BALANCED WHEELS FOR HIGH SPEED OPERATION —
Thoroughly unique in design and construction — patented. So perfectly balanced that even when delivering 12,000 feet of sawblade travel per minute, they are absolutely vibrationless. This assures both vastly increased production and cleaner, smoother cuts requiring less follow-up work.

SPEEDI-CHANGE TIRES — of long wearing re-inforced rubber on rims that are quickly replaced, positively aligned and held in place without any bolts or nuts.

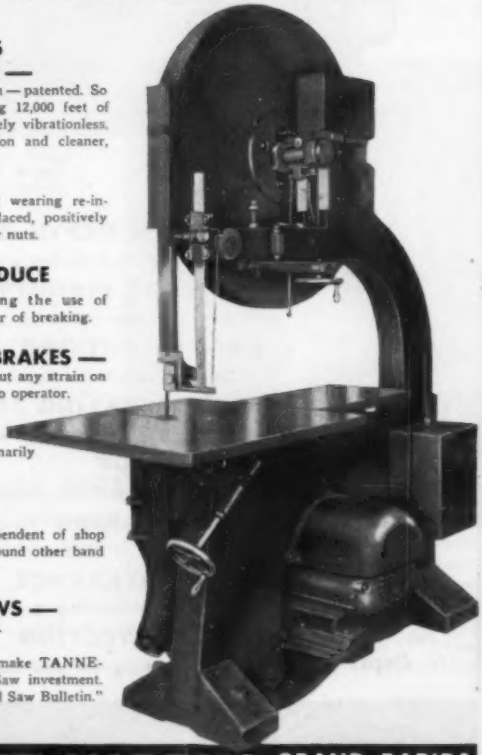
WHEEL MOUNTINGS THAT REDUCE SAW BLADE STRAIN — permitting the use of blades as small as 1/16" without undue danger of breaking.

TWO-WHEEL, SYNCHRONIZED BRAKES —
Foot treadle stops both wheels instantly without any strain on saw blade — prevents damage to tires, injury to operator.

GEARED-GUIDE POST —
eliminates the awkward lift and strain ordinarily involved in adjusting guide post. Saves time.

AUTOMATIC, BUILT-IN DUST REMOVAL SYSTEM — entirely independent of shop system. Eliminates the dust cloud common around other band saws. Patented.

GUIDES WITH REVERSIBLE JAWS —
supremely tough and designed for double wear.



These and many other unique features make TANNEWITZ by far the best possible Band Saw investment. Get the complete facts. Just ask for "Band Saw Bulletin."

The TANNEWITZ WORKS GRAND RAPIDS MICHIGAN

— SAWING MACHINERY SPECIALISTS — ☎ GL-6-1729

THE HALLMARK
of Quality

Represented in the Entire Knife Line. And Introducing a New High Speed Steel Thin Knife

Stalter EDGE TOOL CO.

THIN HIGH SPEED STEEL

SHAPER STEEL

TUNGSTEN TEMPER

An entirely new and improved High Speed Steel Thin Knife is now being presented by the Stalter Edge Tool Company under the well known name of Tungsten Temper.
To provide a better knife Stalter has added an exclusive new NON-SLIP back. Metallurgical study has increased the edge strength. Order a set of Stalter Thin Knives and prove the advantages in your own plant.
The same new developments are incorporated in the Stalter Shaper Steel. The apex in shaper steel manufacture.

TUNGSTEN TEMPER

For use on modern fast moulders and stickers the Stalter Tungsten Temper (High Speed) or Thermo Temper (Carbon) provides the finest in slotted thick knives.

THERMO TEMPER

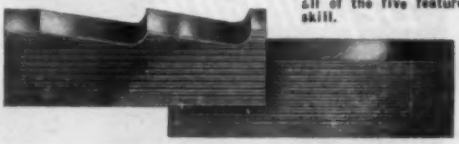
High Speed or Carbon Steel Planer Knives can be furnished to your specifications. Stalter Planer Knives can be supplied solid or inlaid. Write our engineering department for their recommendations.

Accurate interpretation of your patterns, ground into one of the selected Stalter Knives, provides you with trouble free operation. Send Stalter your pattern or sample.

Tenon Knives furnished in High Speed or Carbon Steel, when made by Stalter, are the tops in durability, balance, and stamina.

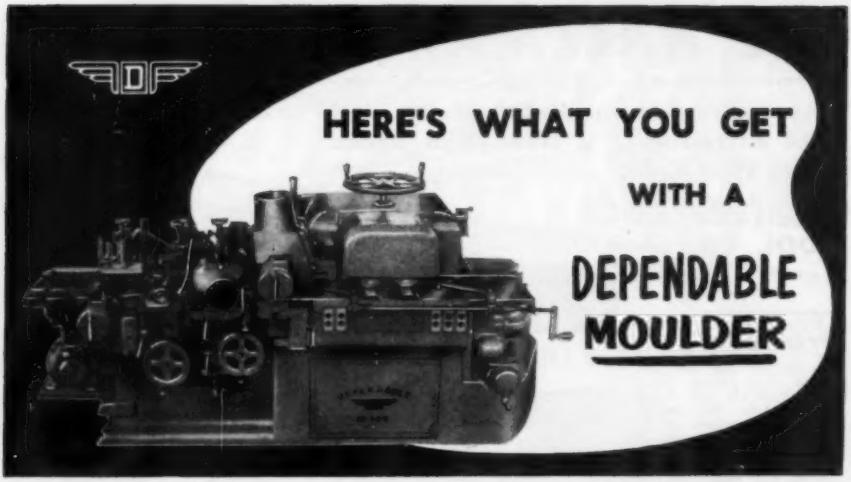
Shaper knives made from Stalters premium shaper steel insures long lasting edges and safe operation.

Corrugated knives, ground-to-pattern, straight or bar length includes all of the five features of the Stalter knife making reputation and skill.



Stalter EDGE TOOL CO.

GRAND RAPIDS, MICH.



★ FINER FINISHES
★ HIGHER PRODUCTION

It's a hard combination to beat—and you get both with Dependable's Electro Unit Drive Moulder.

Dependable Moulders are designed for high speed production. Rate of feed is from 20-150 FPM with U. S. Varidrive. Variable, high spindle speeds (up to 6,000 RPM) are obtained **without frequency changer.** Spindle speeds can be adjusted independently of one another. Standard operating speed is 5,000 RPM.

And because of higher spindle speeds, you get finer finishes with fewer knives. Production costs are cut because you have less knives to buy, grind and maintain. On a Dependable Moulder, **four knife heads do the work of six.**

These features combined with the versatile Removable Cartridge Spindle Unit, make the Dependable Moulder the best buy on the market today. Moulders are available in 4, 6, 8 and 10 inch models. All models have large maximum cutting circles, heavy cast iron construction and 100% ball and roller bearings. Call or write for full information or ask for Bulletin C-12.

DEPENDABLE BUILDS:

Gang Rip Saws	Saw Grinders
Knife Jointers	Blower Fans
Knife Grinders	Knives
Knife Balancers	Moulders
Head Grinders	Cutter Heads

Dependable
MACHINE COMPANY, INC.
GREENSBORO, NORTH CAROLINA, U. S. A.

In Prefabricated Homes...

PENACOLITE®-Bonded Wall Panels

give

Extra Strength

Extra Durability

Prefabricated homes are smart looking. They are economical and quickly-constructed. But, more important, they are rugged, durable and built to last. And Penacolite Adhesives are often largely responsible for this strength and durability.

Penacolite Adhesives are used extensively to bond exterior and interior plywood sheets to the vertical studs, forming sound, resilient panel units that are very strong, yet lighter and easier to handle than solid wood.

Penacolite bonds are completely waterproof, and remain as strong as the woods they join through all types of weather conditions and temperature changes. Furthermore, they *retain* their strength, because they are unaffected by age, long exposure, or the shrinking and swelling of wood.

Penacolite Adhesives, manufactured by Koppers, have found wide acceptance in various wood bonding fields—industrial, marine, farm and others. Write today for further information about these versatile adhesives and their many uses. Koppers Company, Inc., Chemical Division, Dept. WD-16, Pittsburgh 19, Pennsylvania.

KOPPERS®

PENACOLITE® RESORCINOL ADHESIVES

The original, waterproof room-temperature-setting adhesives.

BE INFORMED ON WOOD GLUING

Interested in glues and gluing? If so, your name should be on the mailing list of THE PERKINS GLUE LINE. This house organ of Perkins Glue Company is mailed free of cost or obligation to all who request it.

Recent issues of THE GLUE LINE have carried articles on a wide variety of subjects including: Glue Selection, Glue Handling & Storage, High Frequency, Moisture Content Detection, Moisture Control, Hardwood Plywood Imports and similar topics.

Don't miss a single issue of THE GLUE LINE! Mail coupon below to Perkins Glue Co., Lansdale, Pa. today. Be informed on wood gluing!

the PERKINS GLUE LINE

Form of R.F. Energy Principal Factor In Choice of Adhesive for R.F. Gluing

Heated Storage Area Lowers M.C. Check Stock Before Resin Gluing

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Mail to: Perkins Glue Company, Lansdale, Pa.

PERKINS GLUE COMPANY

LANSDALE, PA. • HIGH POINT, N. C. • SHAWANO, WISCONSIN
KITCHENER, ONTARIO • LA CHUTE, QUEBEC

16" saw rips 3½" stock at 45° angle!

FAY & EGAN

NO. 511 - B

UNIVERSAL TILTING ARBOR SAW

...for accurate

- Mitering
- Trimming
- Dadoing
- Gaining
- and allied operation

F.O.B. FACTORY, CINCINNATI, OHIO

ONLY $1145.00

- RUGGED CONSTRUCTION
- FABRICATED STEEL FRAME
- VIBRATION-FREE OPERATION
- BUILT-IN DUST CHUTE
- HEAVY DUTY 5 HP DIRECT MOUNTED MOTOR

CUTS OFF stock 1" thick, 18" wide

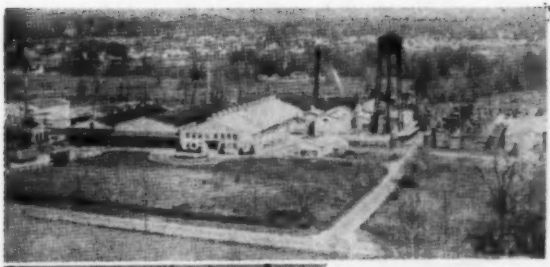
RIPS 24" wide to right, 18" to left

RIPS AT 45° ANGLE: full 3½" thick with 16" saw—5" thick with 18" saw

DADO HEADS to 2" wide used on standard arbor

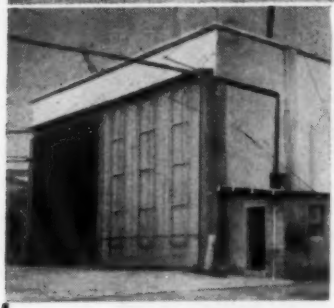
Write today for bulletin showing complete specifications

FAY & EGAN CO.
2023 Eastern Avenue
CINCINNATI 2, OHIO



AT LEFT: Aerial view of Chester B. Stem, Inc., New Albany, Indiana, manufacturers of veneers and lumber.

BELOW: Photograph of the firm's package-type STANDARD DRY KILN installation. The firm's president writes: "We are glad to report we have had very satisfactory service from our STANDARD kilns. So much so that we are now ordering a third and larger kiln from you."



YOU'RE ALWAYS AHEAD WITH Standard

THE Quality Name in Dry Kilns

● **Operators throughout the woodworking industry agree STANDARD DRY KILNS increase output, virtually eliminate waste, and assure uniform quality, load after load. Why is this so? Because with STANDARD'S exclusive direct-driven fan operation and precision control of heat, humidity, and ventilation, there's no guesswork involved.**

For a new kiln, a full battery of kilns, or if you want to bring your old natural draft installation up to modern, money-making par, consult a skilled *Standard engineer*. Remember, you're always ahead with STANDARD!

Write for free, illustrated Standard catalog

OTHER FAMOUS STANDARD PRODUCTS

- Dry Kiln Door
- Dryer Door
- Green Lumber Stacker
- Lumber Hoist
- Trucks
- Moisture Registers
- Complete Testing Equipment

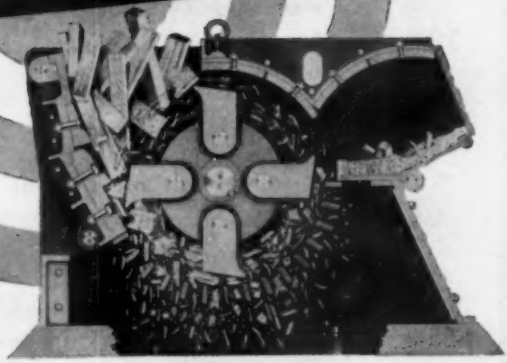
Manufacturers of Internal Fan Kilns

STANDARD
Engineers and Manufacturers Since 1897
DRY KILN COMPANY

P. O. BOX 5708 . . . . INDIANAPOLIS 21, IND.

MAKE A 2-Way Profit ON WOOD SCRAP!

WILLIAMS "No-Nife" HOGS



Cross section of "No-Nife" Hog showing how fast-revolving chisel-edge hammers reduce wood by impact until properly sized to pass through grate at bottom of machine.

1 Waste wood, automatically conveyed and hogged on Williams equipment, reduces disposai costs up to 75%! One man can handle as much tonnage in chips as three men can handle in awkward pieces and lengths.

2 **If used for fuel,** scrap wood hogged on a Williams is completely combustible, yields maximum BTU's, gives 100% heating value. Unhogged scrap restricts air flow, burns unevenly, smothers the fire, causes excessive smoke.

If sold in chip form to chip board manufacturers, wood refuse processed in a "No-Nife" Hog becomes a top quality product, uniformly ground and sized, and commanding highest prices.

WILLIAMS LINE IS COMPLETE: Hogs, Grinders & Shredders • Vibrating Screens • Air & Mechanical Separators • Heavy Duty Fans • Cyclone Collectors

Complete Brochure On Request— Write For It!

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
808 ST. LOUIS AVENUE **St. Louis 6, Mo.**

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

WOOD WORKING DIGEST

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101	Glossary of Adhesive Terms	25c
	Twenty pages of adhesive terms used in the woodworking industry.	
102	American Woods	35c
	More than 80 different wood species described and best utilizations listed.	
103	Electronic Gluing	1.00
	A comprehensive survey of electronic gluing applications covered in this 80-page booklet.	
104	Types of Plywood	1.00
	The various types of plywood; manufacture of and utilizations.	
105	Handy Reference Tables	25c
	A 16-page booklet including helpful tables for every woodworker.	
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	Tom Perry describes current gluing techniques in this 50-page booklet.	
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	Fundamentals as to how different tools function in separating fibres of wood. 50 pages.	

Use this convenient coupon to place your order

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Order by number: _____

Amount Enclosed $_____

Controlled compressed air has given Industry muscle-saving power to produce more, economically, without fatigue, more safely.

Wherever *you* actually use compressed air—you'll make its use more effective if you use the best valves possible—Schrader Valves.

In the complete line of Schrader Valves you'll find two-, three- and four-way models . . . for hand, foot, cam, pilot or solenoid operation . . . for practically any application.

Find out how Schrader Valves can put compressed air to work to save you money. Write—or, if you prefer, fill out the coupon below.

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LEADERS IN AIR CONTROL SINCE 1844

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Div. of Scovill Manufacturing Company, Incorporated
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I am interested in more information on_____

Name_____ Title_____

Company_____

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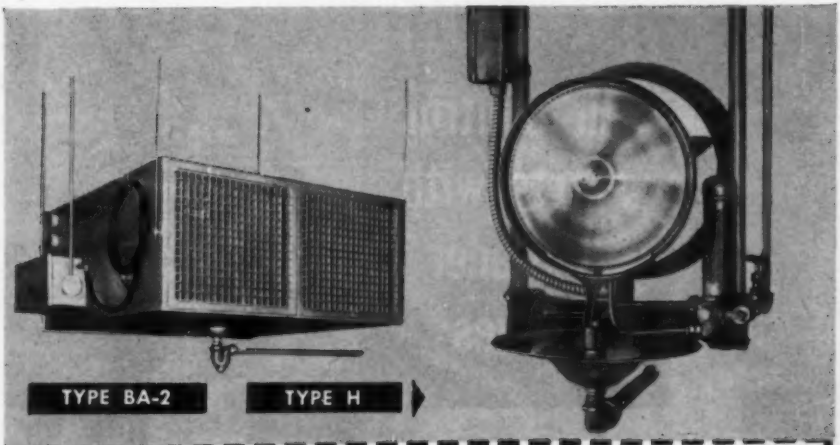


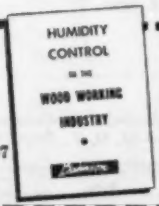
HUMIDITY CONTROL

PROVIDES IDEAL PRODUCTION CLIMATE

Wood working plants of all sizes report huge savings in time, labor, money with Bahnson Unit Humidifiers that STOP DRY AIR PROBLEMS . . . keep moisture content at correct levels.

- **Economical** — Operating costs as low as $10 per year per unit.
- **Adaptable** — For small or large areas, with single or multiple installations
- **Saves space** — Units suspend from ceiling; simple installation.
- **Wide range** — Evaporative capacity for every need, using water or steam.
- **Self-contained** — Most units require only electrical and water or steam connections.

Get the full story *now*. Reduce warping and shrinkage —increase profit margins—with Bahnson Unit Humidifiers.



W-7

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Fact-filled booklet saves time, dollars, headaches. Clip coupon to letterhead and mail today.

AIR CONDITIONING • HUMIDIFICATION

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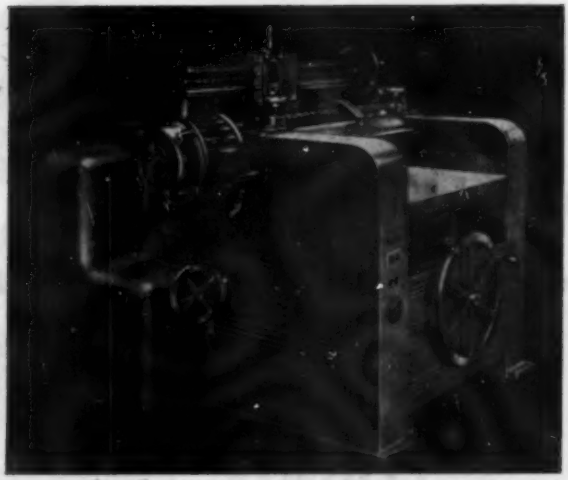
PRODUCT of PLANER SPECIALISTS



No. 4-L Single Surface, Medium sized planer for first cutting and finishing work.

Exclusively

. . . which accounts for the fact that in this model as well as ALL BUSS Cabinet Surfacers you will find more patented, exclusive features than in any other planers . . . features that assure finer finish planing, greatly increased production and long, trouble-free service.

6 MODELS 29 SIZES

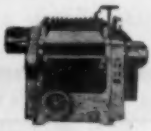
THERE'S A BUSS PLANER TO EXACTLY SUIT YOUR NEEDS

No. 44 Single Surface, 4 roll planer for first cutting and finishing work.

No. 66 Single Surface, 6 roll planer for first cutting and finishing work.

No. 88 Double Surface, 8 roll planer for first cutting and finishing work.

No. 55 Heavy duty Double Surfacer for planing rough lumber.



MICRO-SURFACER for planing hardboard and other very thin materials.

BUSS SINCE 1862 MACHINE WORKS

Write for bulletins describing these machines in detail and you will readily understand why we say it is usually far cheaper to own them than to do without them.

PLANER SPECIALISTS EXCLUSIVELY

234 EIGHTH STREET • HOLLAND, MICHIGAN

Balance

COUNTS in CUTTERHEADS TOO!

Standard of Comparison in the Woodworking Industry

Diehl

THE G. M.
DIEHL MACHINE WORKS, INC.
WABASH, INDIANA

"WHY DON'T THEY?"

The Editor's Page

A popular column in a leading magazine is entitled "Why Don't They?" The column consists of one suggestion after another which would improve or simplify some of life's smaller problems.

This same question comes to mind for the woodworking industry. Why don't they get down to the consumer level with some hard-hitting, well-planned campaigns to push wood products? Why don't they carefully examine costing and pricing? Why don't they REALLY merchandise wood?

Why does the public continue to buy wood products? Many people know that wood products are superior, but how much credit can we take for actually "selling"? Too often the public has made a "self-discovery" of wood's advantages. Our industry, in many respects, is riding along on the coat tails of prosperity.

Within the last year we have been in several association meetings where merchandising was scheduled for discussion. There was discussion, but somehow plans and programs do not get off the ground and we still ask, "Why don't they?"

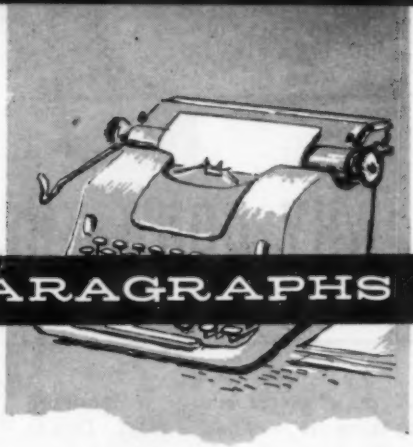
Part of the solution lies in changing the question to "Why don't WE?" The need for planned merchandising programs becomes more apparent each month. It is a personal problem and each wood products manufacturer ought to give some thought to publicizing his own products.

WOOD WORKING DIGEST is sponsoring the Third Annual Award of Merit Contest for firms, associations and schools who are effectively promoting the use of wood products. This is our way of helping to stimulate promotion and merchandising of wood products. In the past two years we have seen firms, associations and colleges receive awards for the fine work they have done. Stories of the winners have appeared in past issues of WOOD WORKING DIGEST.

Write to the Editor for a folder, giving details about the contest.

Let's change the question, "Why don't they?" into tangible campaigns to promote wood and make 1956 the best year for all of us!

E. McDaniel
Editor



POINTED PARAGRAPHS

A record production of 120,000 factory-made homes is anticipated for 1956 by the Prefabricated Home Manufacturers' Institute. In 1955, industry shipment aggregated nearly 100,000.

The January Markets promise to be record breakers. Grand Rapids show is scheduled for January 5 to 18. Chicago show will begin January 9 and run through January 20.

New commercial standard for hardwood veneered hollow-core flush doors has recently been announced. The standard, CS 200-55, promulgated by the U. S. Department of Commerce, sets basic requirements for hollow-core doors, relating them to the grade labeling system of the National Woodwork Manufacturers Association.

Lumber consumption for 1955 has been estimated as 5% above the figure of 40 billion board feet used in 1954. Softwoods and hardwoods have both showed gains in the last year.

The 12th Annual Convention-Exposition of the National Association of Home Builders will be held January 22-26. Attendance is predicted at between 25,000 and 30,000 visitors.

Freight rates on shipments of wood dining room furniture will not be reduced the ICC announced recently. An official explained that the transportation characteristics of chromeplated steel furniture and wood furniture are not at all similar. In addition, damage claims for steel items are lower than the national average for all other kinds of furniture.

Consumer demand for television sets has never been so great and the market for phonographs is wide open.

Save Time Save Money

use

DUO-FAST automatic TACKERS

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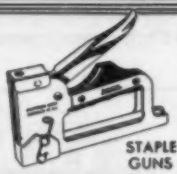

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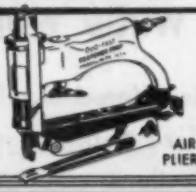

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Be sure to read the article "Don't Overpay Your Taxes." If you have questions, we shall be glad to refer them to the American Association of Accountants. You may be able to save money by a careful investigation of your costs and profits.

National Plywood Distributors Association held a meeting in November at Miami Beach. Albert Hersch, president of Industrial Plywood Co., Long Island, N. Y., was elected second vice-president. Leonard E. Hall is president of the association.

A new product may soon be offered to the public. It is a plastic sandwich in 4' x 8' sheets with plastic or impregnated wood veneer faces. It will be resistant to moisture, fire and other destructive elements.

Process Engineering Corporation, Crystal Lake, Ill., is among firms who have moved into new locations. Plant is now on Virginia Street and P.O. Box 163 is the mailing address.

It is expected that within the next 60 days, West Coast lumber will be graded under a new rule—Rule No. 15. An attempt has been made to write a rule which the purchaser of lumber can readily understand. It is not a technical document. Information about these grading rules is available from the West Coast Lumbermen's Association, Portland 5, Oregon.

An early decision is expected on pay-as-you-see TV. FCC officials who are studying some 25,000 formal pleadings and letters regarding this controversial subject, say a ruling is unlikely before next year. Three major toll TV systems have been proposed.

If there are plywood utilizations you would like to see described in Tom Perry's current series, please drop us a line suggesting the topic.

It seems from all indications that 1956 will be another good year. A number of plants, including the Mengel Company, have plans for expansion. Reports from associations all predict a rosy future. The real danger lies in our complacent acceptance of it. Let's use the next 12-months to further entrench wood products in the American way of life.

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Comments

FROM THE NATION'S CAPITAL

By **Arnold Kruckman**

Washington Correspondent

The Interdepartmental Committee on Trade Agreements and the U.S. Tariff Commission in December issued notices that they would consider a list of 34 additional products to be added to the schedule to be considered at Geneva by GATT.

Formal notification was published that those desiring to be heard in connection with the schedule must submit written briefs or make oral presentation to the Committee for Reciprocity Information not later than twelve noon, January 6, 1956. The U.S. Tariff Commission issued a similar bulletin.

The hearings will begin on January 17, 1956 both before the U.S. Tariff Commission, the Interdepartmental Committee on Trade Agreements, and the Committee for Reciprocity Information. The hearings are held at the suggestion of the President, as recommended in his message to Congress on March 30, 1954, particularly in regard to wages which are substandard in the exporting countries, and which thus present peril points on certain listed items which may be exported into the United States by these countries.

Under the new Trade Agreements Act the President has authority to reduce tariffs by 15% over a three-year period, and also to decrease to 50% ad valorem any duties which now are above 50%.

Another hearing has been announced by the U.S. Tariff Commission on January 10, 1956, as an investigation into certain alleged violations of the Antidumping Act of 1921, as amended.

A report on hardwood plywood covering all types and grades, except container and packaging grades, has been assembled by the Commission in connection with its recent escape-clause investigations. The Commission announces the report just issued makes available to the public for the first time, and in a single text, comprehensive information about the domestic industry producing hardwood plywood. It includes an analysis of

U.S. imports, exports, domestic production and consumption. Also basic data relating to employment and workers' earnings in the industry, marketing and distribution, price trends, the profitability of domestic firms that produce hardwood plywood and the competition between domestically produced and imported hardwood plywood.

As long as the supply lasts copies of the report may be obtained by applying to the U.S. Tariff Commission, 8th and E Streets, N.W., Washington 25, D.C.

A considerable volume of wood products are being exported by Yugoslavia to the United States. The products exported include bentwood chairs, and other products made of Yugoslav beech, oak, walnut and ash. A great quantity of furniture manufactured in Yugoslavia, according to the Department of Commerce, is destined for the United States. Yugoslavia has over 200 plants engaged in furniture production. The volume of their output has increased more than 200 percent over pre-war levels. Four plants alone turn out over 1,300,000 pieces of furniture a year. In the first half of 1955 Yugoslavia exported furniture valued at $646,000 of which almost $600,000 worth went to the United States and the United Kingdom. Most of the bentwood wicker basket products came to the United States market. Wickerwork is one of Yugoslavia's oldest handicrafts. Winter is the main period of production. Much of the wickerwork is made in Yugoslavian homes which are estimated to have 3,000 permanent workers engaged in the industry.

Donald G. Shook of Washington, formerly Assistant General Manager of the Cowles Publications, Inc., has been named Deputy Director of the Forest Products Division, Business and Defense Services Administration, U.S. Department of Commerce. This is the Division which functions on all matters affecting lumber and wood products.

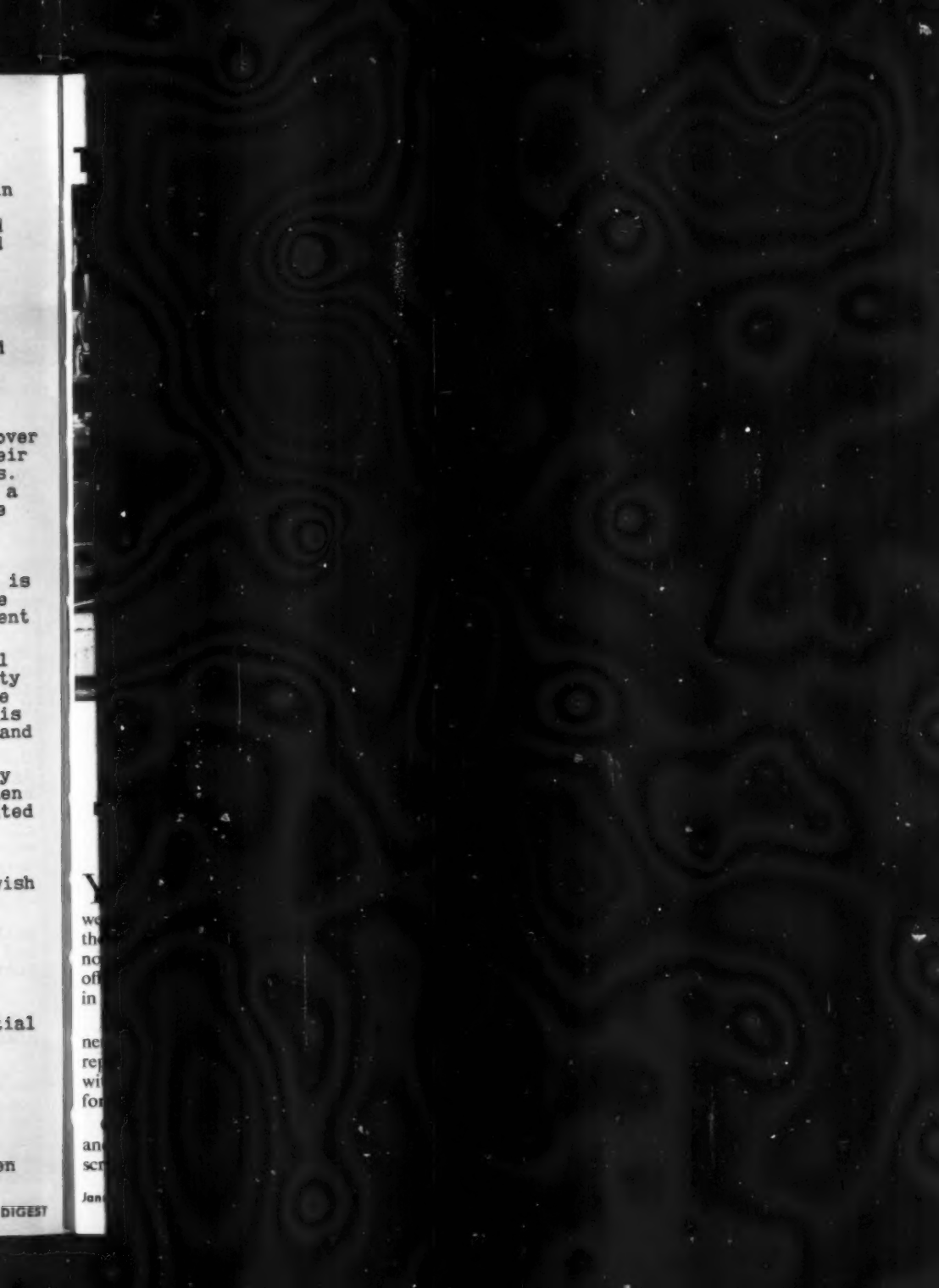
The Business and Defense Services Administration recently issued an appeal to the nation's manufacturers and business men urging they make wider use of the Government's Index of Patented Inventions. This Index, which contains brief descriptions of over 21,000 inventions, has been placed in the public search rooms of the U.S. Patent Office on the first floor of the Commerce Building and is thus readily accessible to all who wish to examine it.

Administrator Charles F. Honeywell has directed BDSA's twenty-five industry divisions to bring the Index to the attention of manufacturers, business men, trade associations, and others.

The heavy volume of work required of the BDSA's limited staff, prevent it from making searches and to carry on essential correspondence. It therefore has made the Index easily available to anyone interested. It is particularly pointed out that it has considerable value to small manufacturers.

The legislative program regarded as the index of the program to be considered on the Hill in the 1956 Session, consists of thirteen points. They are:

1. A social security bill reducing the age limit of women and extending coverage to most self-employed groups.



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2. A tax revision to benefit the low-income groups.

3. A health program to aid medical research and to include larger grants for hospital construction.

4. A school construction program to meet the needs of the children.

5. A public roads program, probably similar to the Gore bill. The question of taxes to pay for a highway program is part of the general tax program, but it is hoped it can be handled separately.

6. A farm program which will restore 90 percent of parity subsidies, extend the benefits to additional products; and possibly include a soil rental program.

7. A natural gas bill which will preserve free enterprise and, of course, provide legitimate protection for consumers.

8. A housing program designed for America's families yearning to build or rent dwellings they can afford.

9. A water resources program with specific consideration of a higher dam at Hell's Canyon; the Frying Pan Arkansas project; Niagara development; the Upper Colorado Basin project; the Washita-Oklahoma project; the Ventura, California program, and a New England development project.

10. A program to relieve critical depressed areas on the basis of Federal and State cooperation, including tax measures to encourage industry; additional public works; supplementary unemployment insurance, and surplus food grants.

11. Amendments to the immigration and naturalization laws to insure that they are fair and just.

12. A Constitutional amendment eliminating the poll tax.

13. Disaster insurance to protect the people from the ravages of nature.

An attempt will be made to boost postal rates, increasing the Post Office Department's revenue. The Postmaster General conferred with the President about it. The plan is expected to increase from 3¢ to 4¢ postage for first-class letters, and raise from 6¢ to 7¢ airmail.

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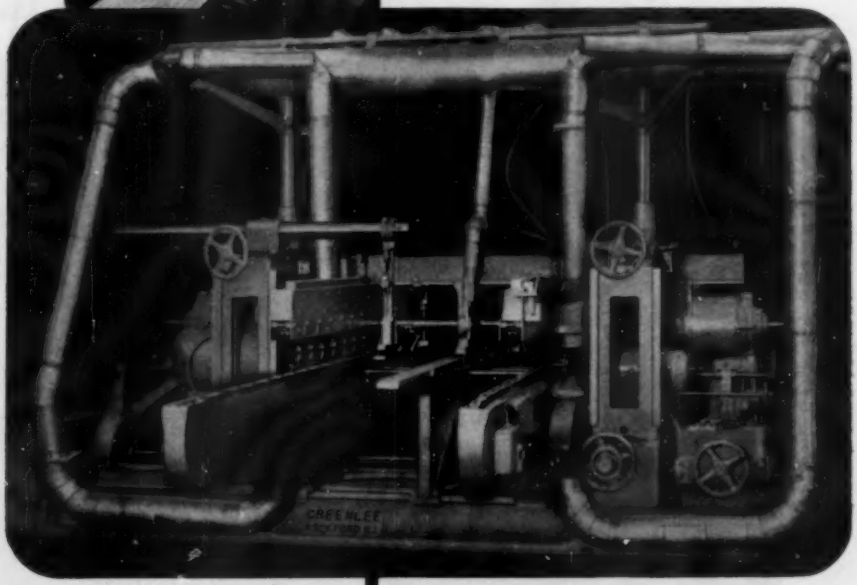

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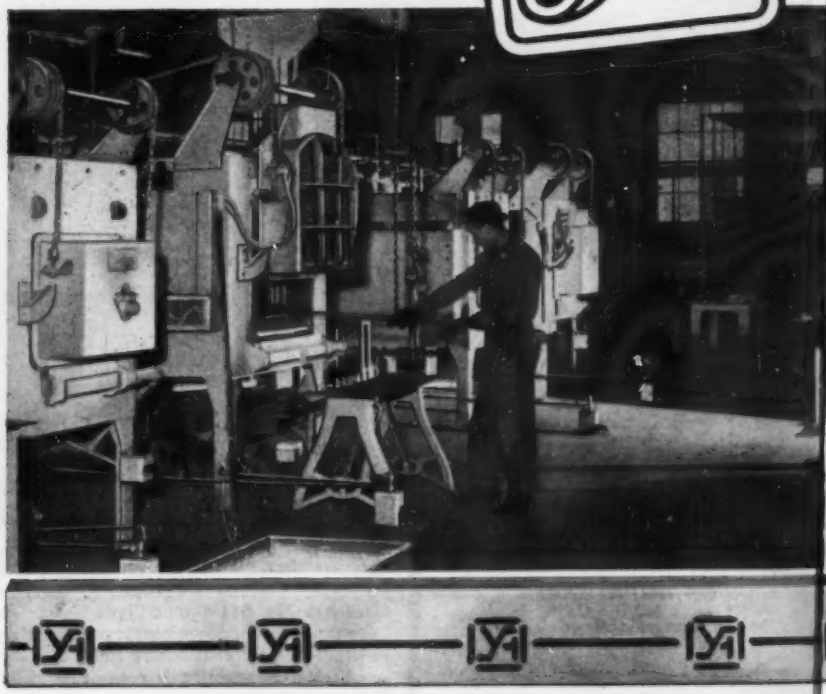

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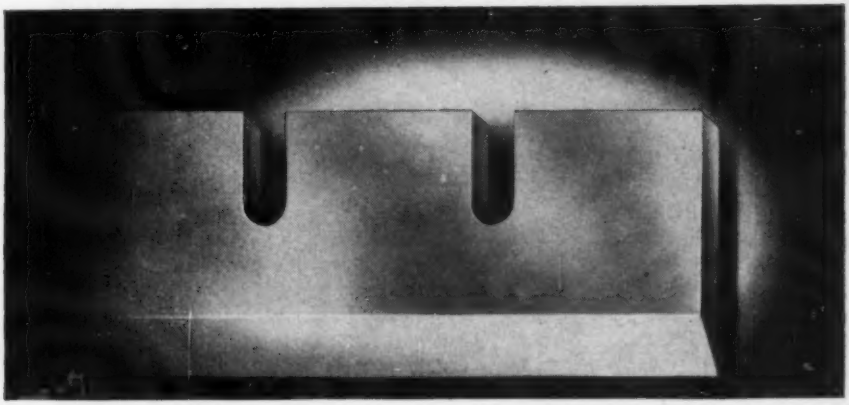

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Fundamentals of WOOD MACHINING

By Carl Chekouras

THE machining of a pattern on the face or edge of wood is known as molding. Sash doors, trim, picture frames, furniture parts, panel walls, pencils, rulers, etc., are all products of some type of molder. The woodworking machine known as a molder, although apparently complicated, is basically a simple machine.

Originally molders were made having a revolving cutterhead upon which were clamped knives ground to a desired pattern. The stock was fed under the cutterhead and a pattern would be cut into the edge or side of the stick. It is believed that the original term sticking came from this operation. The machine used for this operation was referred to as a sticker. Although modern molders are used to manufacture sash and door parts they are many times referred to as stickers when employed in the manufacture of such parts.

Molding on a Profile Head of Matcher

As discussed in the previous chapter, the matcher can be used to machine certain moldings. Just as the feature portion of knotty pine paneling can be manufactured on a matcher so can other patterns. Although a matcher is more valuable in the manufacture of boards, tongue and groove stock and other dimension materials, it sometimes is employed for the machining of moldings. If the molding has a large portion of a pattern as flat it would be no problem to use the profile head of a matcher for molding the pattern portion in the face of the stock. Some matchers are equipped with a combination head that will also permit the manufacture of moldings using the same cutterhead that machines the surface.

The Molder

The molder is one of the most important machines to the woodworking industry. We could not begin to list the many different patterns that can be manufactured on a molder. There are molders that are capable of molding products all the way from a lollypop to a casket side. It is obvious that a molder is qualified to make such complicated and heavy moldings as casket sides would not be employed for the manufacture of small items such as quarter round or screen molding, unless the machine were equipped to run multiple patterns requiring large capacity.

The molder is described as a sturdily constructed machine with a bed upon which the material is carried through

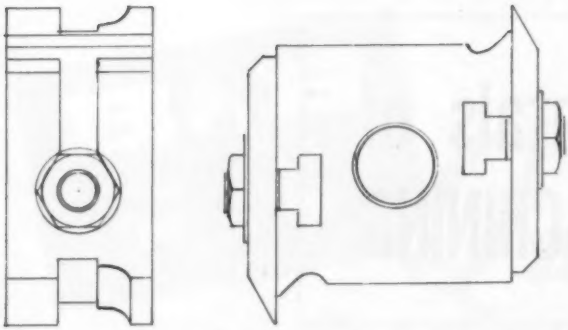


Figure 1. A square cutterhead having two ground-to-pattern knives.

the machine. As the stock enters the machine it is held over to the right, or the guide, side of the machine and the progress of the stock through the machine is activated by two or more feed rolls that hold the stock down firmly to the bed. Below the top feed rolls are either lower feed rollers or a chain (lag) bed that operates in coordination with the feed rolls to firmly hold the stock for further machining.

The typical molder is so designed that the top cutterhead cuts first, the reason being that the stock can then be of even thickness before further machining. In some instances the pattern is cut by the top cutterhead but in most cases it is cut by the bottom, or last cutting, cutterhead. Holding the stock down before the top cutterhead is a device known as a holddown. The older machines have the holddown pressure controlled by weights whereas the modern machines have spring type holddowns. The holddown also acts as a chipbreaker so that the chips of wood being cut by the top head will be controlled.

Above the holddown device and over the top cutterhead is a hood that is connected to a suction system to carry the chips to the main blow pipe. After the top head the stock is held

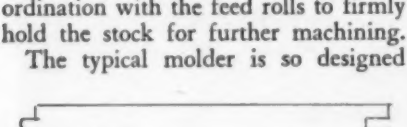


Figure 2. The "pattern" molded by the profile head of a matcher.

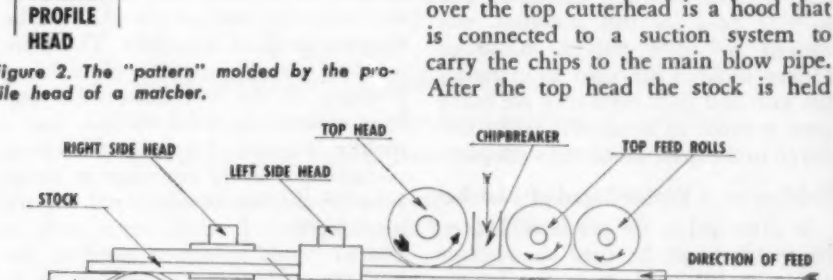


Figure 3. Detail of the main parts of a four head molder.

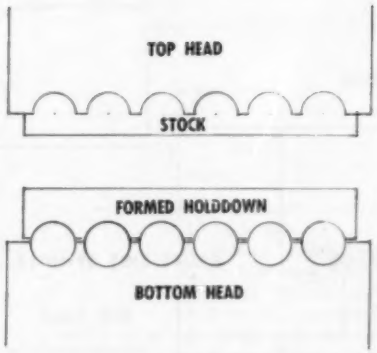


Figure 4. After the top head cuts, the stock is held in line for the bottom head cut.

down by a holddown that is equipped with a shoe. The holddown shoe can be of wood or metal and in the case of multiple pattern moldings the holddown shoe is machined to fit the exact pattern being molded and keep it in line with the bottom head.

The next cutterhead to be applied to the stock is the outside, or left side cutterhead as viewed from the infeed end of the machine. After the outside head, which is also equipped with a hold-over and a suction hood, completes its cut, the material is held to the guide of the machine while it is advanced to a position where the inside, or guide side, head cuts its portion of the pattern. That cutterhead also is equipped with a chipbreaker which is usually a portion of the guide and is enclosed in a dust hood thus allowing suction to pull the side head chips through to the main blow pipe line.

After the top and two side heads have cut their portions of the pattern it is obvious that the stock now is of such even dimension that it can be firmly held both from the side as well as the top while it is being advanced over the bottom cutterhead. The reason for machining moldings on the bottom cutterhead is that the amount of material being removed will always be the same. The pattern will not have to rub under a holddown after it has been machined. The stock passing over the bottom head, for its final operation, is now being held by the side hold-over that keeps it to the guide and a holddown shoe that goes over the bottom head. The molding being completed is then pushed off the machine by the next piece. Unlike the planer, with outfeed feed rolls, the molder usually does not have feed rolls to carry the stock out of the machine as they would impress many of the patterns or distort them by pressure.

It is clear now that the difference between molders, although basically the same, is in size, weight, speed and finer adjustments. The price of a molder is a great factor but it does not control the molder's ability to perform the job.

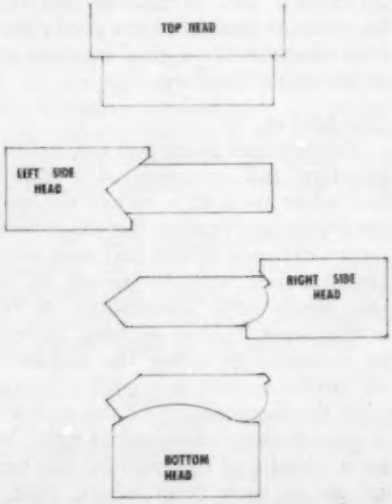


Figure 5. The sequence of molder head cuts.

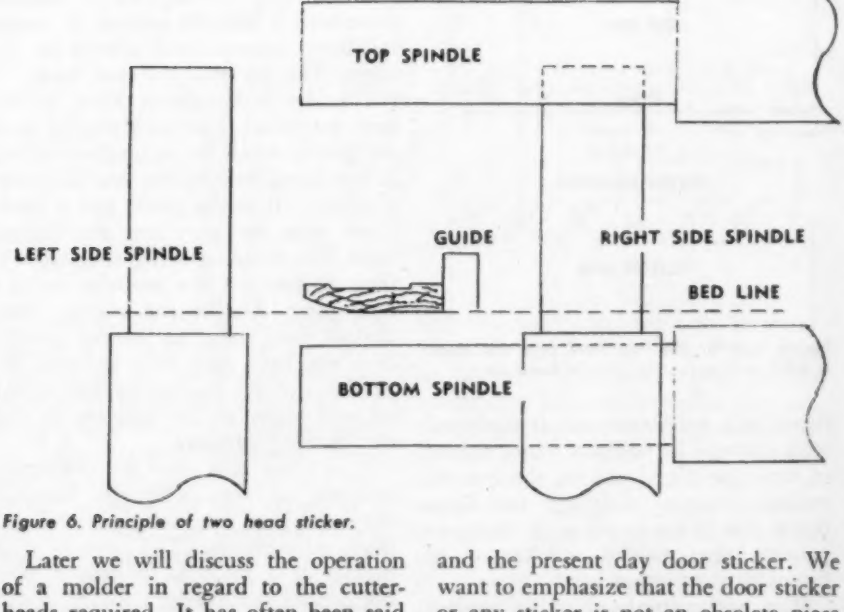


Figure 6. Principle of two head sticker.

Later we will discuss the operation of a molder in regard to the cutterheads required. It has often been said that the machine is no better than its cutterheads and, as true as this may be, we must consider that a good cutterhead cannot make a good machine out of an unqualified one.

The Sticker

The previous paragraph outlined the structure and operation of a molder and when used as a sticker the same conditions apply except that the patterns commonly used in sash and door work, are machined into the pattern by the side heads only. Illustrations in this article show typical sticking patterns as machined by either the molder or the sticker.

In the development of the sticker it is found that additional weight has been added and the machine has been refined to such point where there is no resemblance between the early sticker and the present day door sticker. We want to emphasize that the door sticker or any sticker is not an obsolete piece of machinery. The difference between the present day molder and the sticker, in the manufacture of the same item, is simply that the flat sticker machines a pattern on material that has already been planed to a thickness whereas a molder can dress material to thickness as well as produce the patterns in the sash and door parts.

Cutterheads for Moldings

The advancement of modern molding machines would have been retarded considerably if it were not for the invention of modern cutterheads. If moldings were to be made by cutterheads having but one or two knives, as described earlier, it is obvious that the production rate could not be great enough to justify the present day production requirements. We must bear in mind, however, that there are ma-

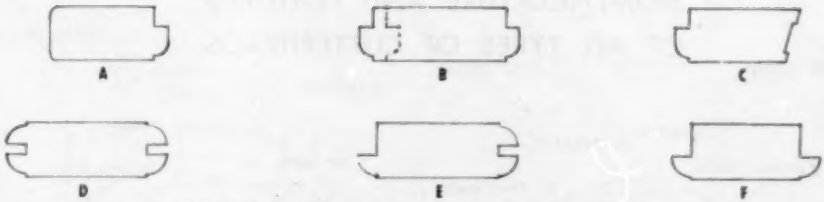


Figure 7. Sash and door parts made on two head sticker.
A. Sash rail.
B. Muntin (wide), mullion (narrow).
C. Bottom sash rail.
D. Panel rail for doors.
E. Lock or center door rail.
F. Glaze door muntin (when used vertically).
Glaze door rail (when used horizontally).

chines of modern construction that have, by increasing the revolutions per minute of the spindle, been able to produce high grade moldings with one or two knives cutting.

The primary cutterhead to be discussed is the round cutterhead. Such cutterheads are used to machine flat surfaces and in some instances can be fit with knives ground to a definite pattern of molding. Round cutterheads are made from 3″ in diameter cutting circles having two or more thin knives to cutting circles to and over 10″ in diameter having 16 or more knives.

Of the round cutterheads there are many different types. One of the types of round cutterheads has a straight bore which has been accurately machined into the cutterhead to cause it to closely fit the spindle. These cutterheads are held to the spindle by a set screw through the cutterhead body or by a spindle nut on the end of the spindle. Another type of round head is the slip-on type that is used on the top or bottom spindles of machines. They are equipped with a self centering sleeve that causes the cutterhead to be firmly held to the spindle in a dynamically correct position. This would insure balance and true running of the machine. When such type cutterheads are made 6″ or longer they are often fitted with self centering devices wherein a beveled collet is forced in from either end to effect the self centering feature. Oftentimes the cutterhead is designed to embody the features of both a round straight knife cutterhead and cutterheads having milled-to-pattern bits. Such cutterheads are referred to as combination cutterheads.

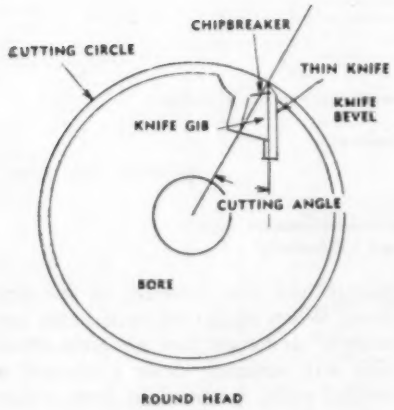
When a round cutterhead is to be used on a side spindle of a machine, it is equipped with a self centering sleeve having a closed end. At the end of this sleeve there is a set screw and a lock nut that holds the cutterheads at a height suitable for the job being molded.

In all cases round cutterheads are designed to have a definite cutting angle and the cutting angle can only be changed by the back beveling of the knives fitted in the cutterhead.

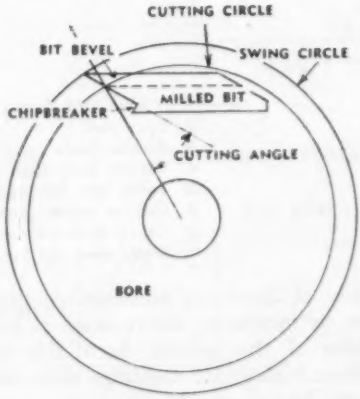
Milled-to-Pattern Bit Heads

In order to increase the speed and accuracy of molding, milled-to-pattern bit cutterheads were designed. There are many styles of milled-to-pattern bit

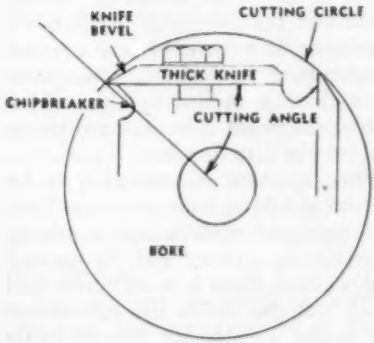
NOMENCLATURE AND FEATURES OF ALL TYPES OF CUTTERHEADS



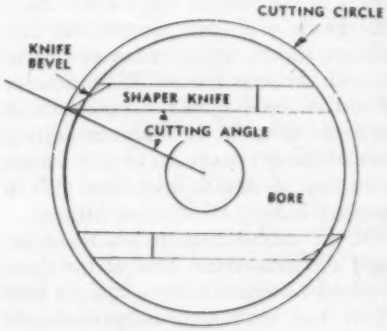
ROUND HEAD



MILLED BIT HEAD



SQUARE HEAD



SHAPER COLLARS

cutterheads in use. However, the milled-to-pattern bit heads can be categorized as follows:

1. Circular bit type head.
2. Dovetail type head.
3. Overclamp type head.
4. Vise grip type head.
5. Periphery milled bit head.
6. Bolt on type head.

Although not alike in appearance, the milled-to-pattern bit heads have the same characteristics—the pattern to be machined is milled into the top of the bit so that the user need only to sharpen the face of the bit to maintain a true pattern. Figure 8 shows six of the main types of cutterheads.

Multiple Pattern Molding

As in the case of the manufacture

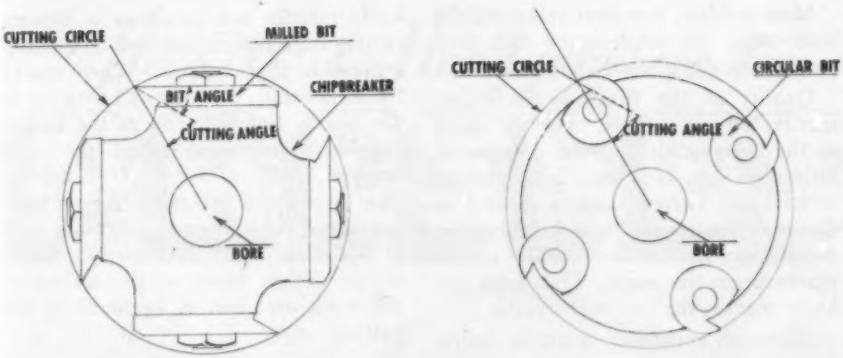


Figure 8. Nomenclature and features of basic types of cutterheads. (See also preceding page.)

of a series of dowels as shown in Figure 4 there are many other patterns that can be molded in multiples providing a great manufacturing advantage. The patterns molded together need not be the same as bits or knives can be furnished to manufacture a combination of patterns. But the stock to be worked must be of the same thickness. For instance, a base shoe, quarter round and cove molding could be manufactured at the same time if desired.

Another great advantage can be gained in time and material if the cutterhead is designed to do more than one operation at once. The illustration shows how screen molding is machined while the screen styles are molded.

If the user of the molder has a continual run of the same pattern, it is most advisable to equip machines with milled-to-pattern heads and to have a spare set of cutterheads ready for a quick change. It is doubtful if a molder operator could make a complete change of bits or knives in less than 20 minutes per head, let alone the downtime while the knives or bits are being sharpened. If another set of cutterheads having the same pattern were available, the entire changeover could be made in 20 minutes.

Unless a single knife operation would fulfil the job it is necessary to joint the cutterheads.

Jointing Cutterheads

Jointing is done by touching the extreme edges of the knives or bits with a soft abrasive stone while the cutterhead is turning at its operating speed. Straight cutterheads are jointed by attaching a small jointer stone to the stone holder and passing the stone over the cutting knives slowly and evenly.

To joint pattern knives a jointer stone should be formed to the contour of the pattern desired. The stone is then clamped in the stone holder and advanced to the cutting knives before the cutterhead is turned on making sure that no one knife projects further than the other. Back the stone away from the cutterhead and then turn on the power. When the cutterhead is up to speed, advance the jointer stone into the cutterhead until it effects a very light joint.

Most molders, matchers and surfacers built today are so designed that they may be equipped with jointers.

Quality of the finish depends primarily, but not entirely, upon the speed of the cutterheads and the number of knives cutting. It is equally important to have the knives properly jointed so that each is cutting exactly the same depth, thereby leaving evenly spaced marks upon the stock. The closer the knife marks, the better the finish.

Although apparently a simple operation, jointing requires careful and delicate adjustment. The lightest joint is the best one. In jointing a thin knife in a round cutterhead where the knives are set closely, only a hairline should show across the knife edge the first time it is jointed. The lighter the joint, the keener the edge and the longer the wear. Heavy jointing wears the knife rapidly and produces a blunter cutting-edge which inclines to pounding rather than cutting. When sparks fly in jointing, the joint is being made too heavy. For best results the knives should be reground when the joint reaches 1/32″ to 3/64″. If a heavier joint is permitted, there will be a beating action of the cutter through lack of sufficient cutting clearance, resulting in broken fibers in the surface of the stock and loss of keenness to the cutting edge.

At the end of the article are pictures of well-known molders. Illustrations were not available from the J. A. Fay & Egan Co., Cincinnati, Ohio, nor Timesavers, Inc., Robbinsdale, Minn.

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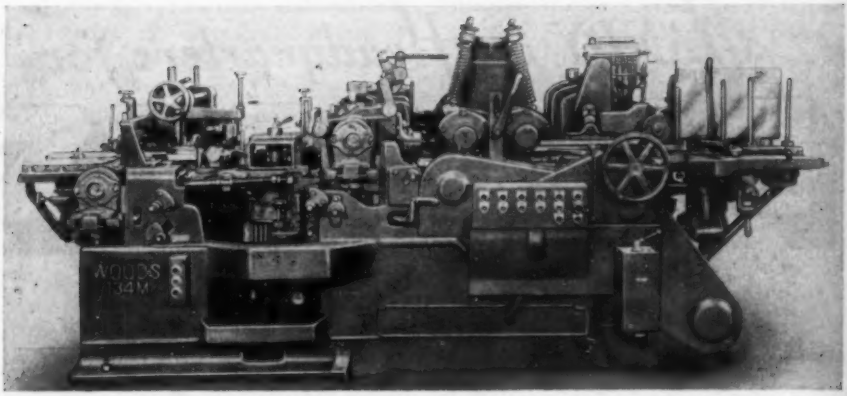
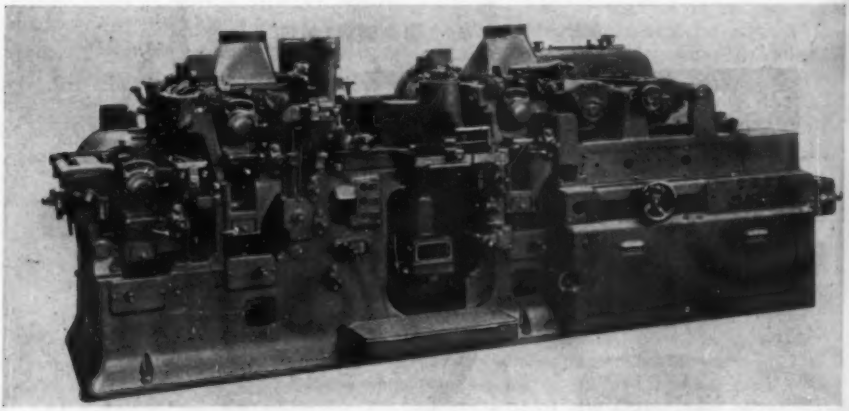


A heavy duty, "lag bed," electric molder. The S. A. Woods Machine Co., Boston, Mass., is the manufacturer.



A heavy duty, high production molder, the C-99, by Yates-American Machine Co., Beloit, Wis.

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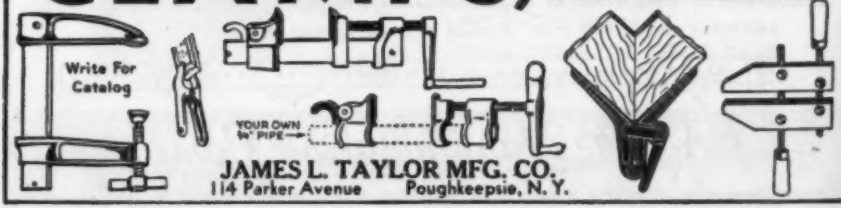

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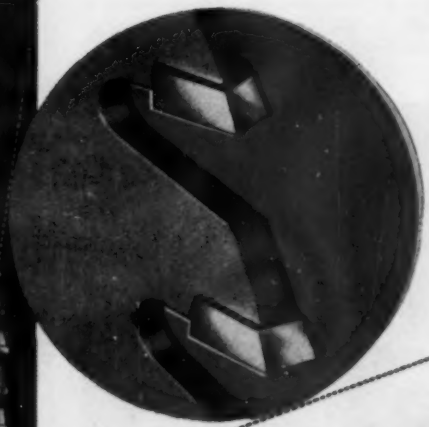

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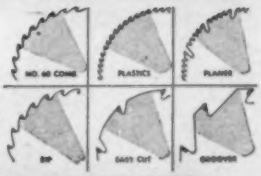

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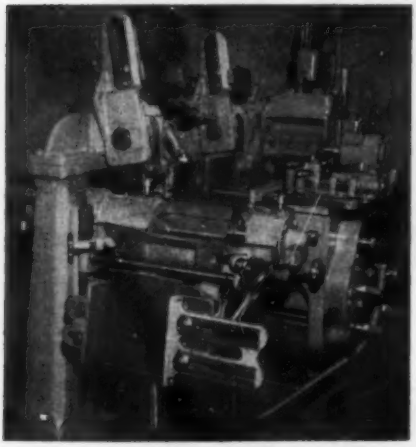
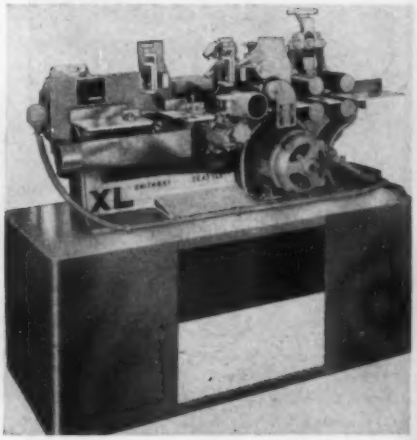
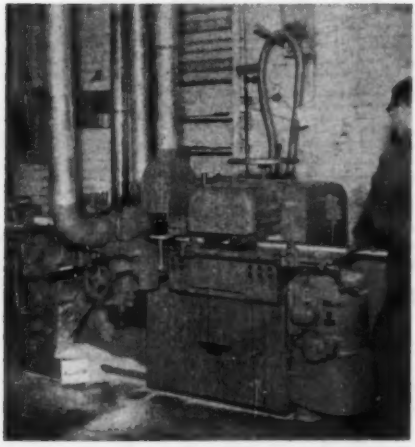
These are pictures showing types of molders discussed in the article "Fundamentals of Wood Machining."



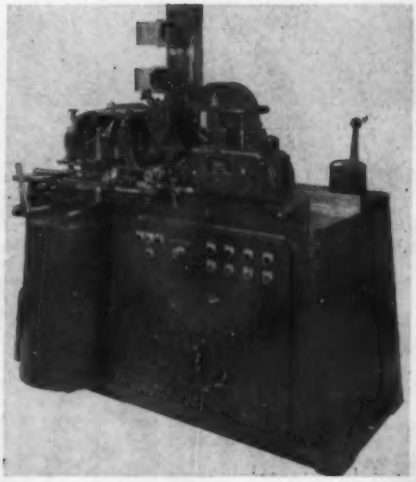
Outfeed end of the No. 60 high speed, ball bearing molder by the Hermance Machine Company, Williamsport, Pa.



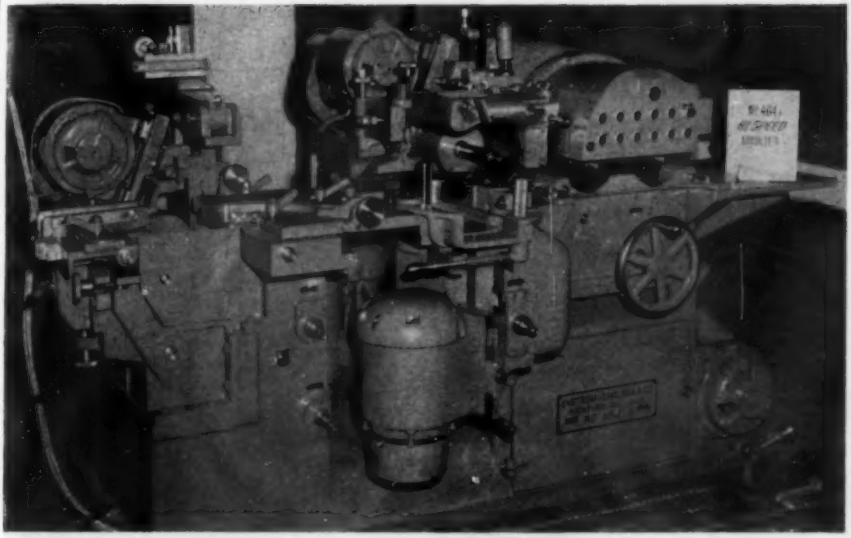
The XL high speed, belt-driven molder, manufactured by the Smithway Machine Company, Seattle, Wash.



Electro drive, high speed molder by the Dependable Machine Company, Greensboro, North Carolina.



Double chain feed 2" x 4" electric molder. The Oliver Machinery Co., Grand Rapids, Mich., is the manufacturer.



A 6" x 4" high speed electric molder manufactured by Ekstrom, Carlson & Co., Rockford, Ill.

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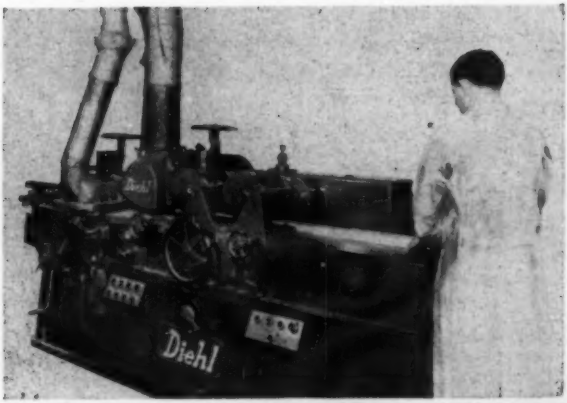
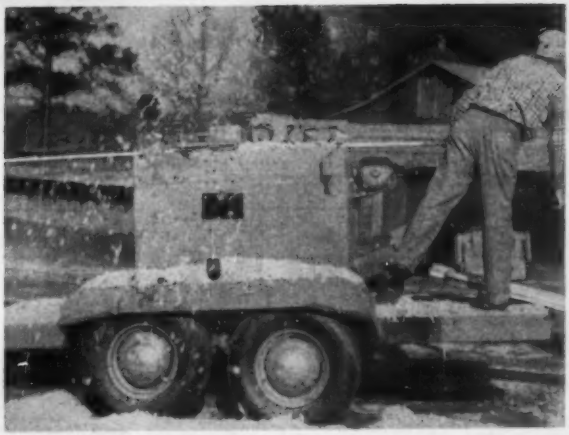
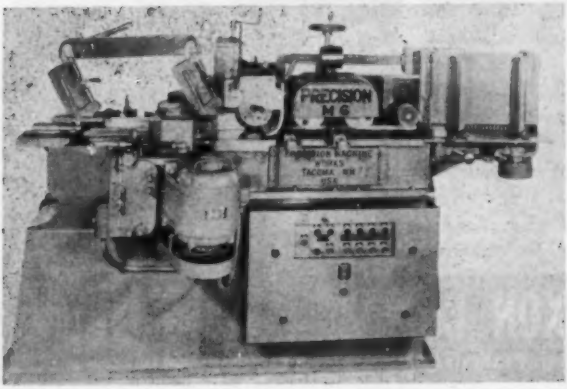


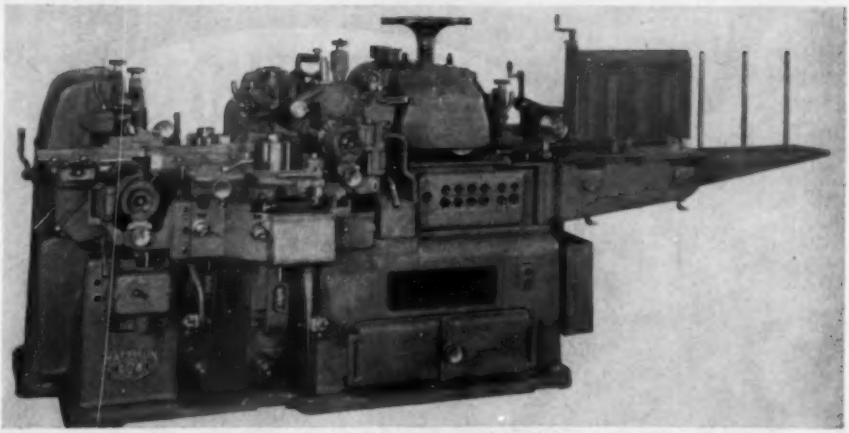
An 8" high speed electric molder by the G. M. Diehl Machine Works, Inc., Wabash, Indiana.



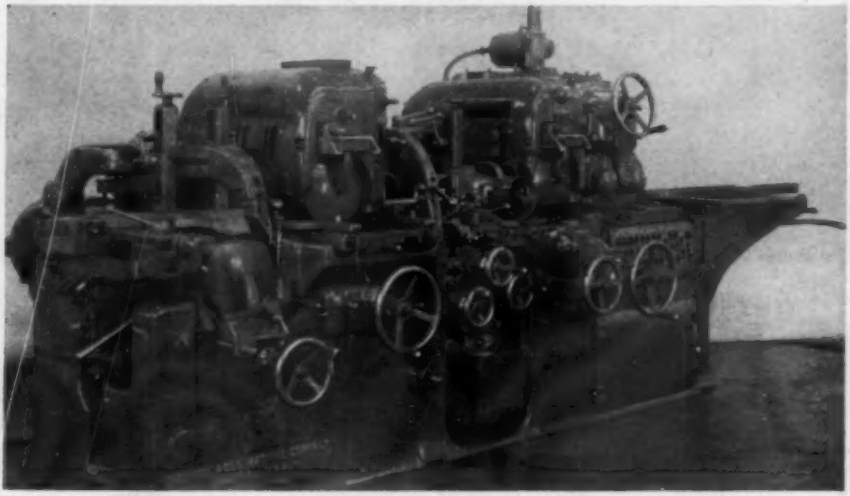
Portable application of a 4" high speed molder. Manufacturer is Machine Tool and Engineering Corp., Atlanta, Ga.



Light 6" electric molder with hopper feed. Precision Machine Works, Tacoma, Wash., is the manufacturer.



A 6" electric molder with hopper feed. This is No. 276 by Mattison Machine Works, Rockford, Ill.



A five-head, high production molder by the Stetson Ross Machine Co., Seattle, Wash.

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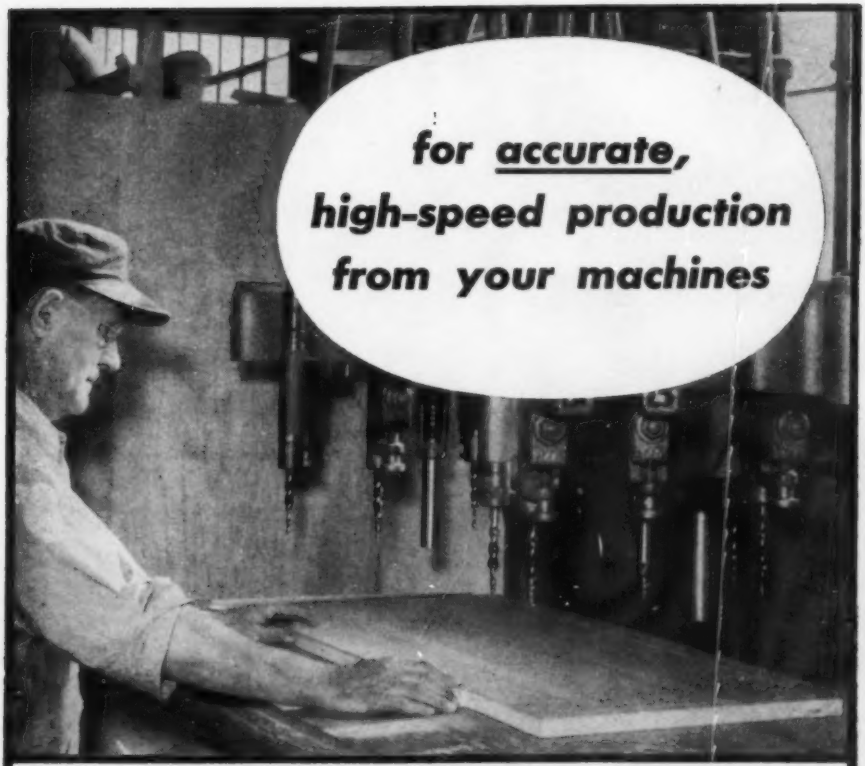

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DON'T OVERPAY YOUR TAXES!

This article is based on information supplied by the American Institute of Accountants, the national professional organization of certified public accountants.

WHETHER the federal income tax rates are cut or not, you may be able to cut your own tax bill—honestly!

To do this you need to know the tax effect of various choices. Your choice of a method of handling a particular transaction can raise or lower your taxes, and sometimes you can save money by a legitimate shift of taxable income or deductions from one year to another. You are also allowed choices in your treatment of certain items in your tax return, such as depreciation and research costs.

Many businesses could reduce their tax burden if they were aware of the tax considerations affecting a variety of transactions. The most feasible means for many businesses to keep alert to tax saving opportunities is frequent consultation with a properly qualified advisor. If the firm retains a certified public accountant or a firm of CPAs, there should be tax consultations not just once a year when the filing date approaches, but throughout the year as decisions are made which will affect the tax.

Choice of Depreciation Method

Certain tax-saving steps are still possible at tax-filing time. One of them is the proper choice of depreciation method. The first step is to determine the estimated useful life of any asset acquired during the tax year. Every businessman should have a copy of "Bulletin F," which contains tables of "average" useful lives. It is available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., for 30c. The tables provide a guide, but it is not necessary to follow them exactly.

The simplest method is straight-line depreciation. It may also be the best in your particular case. Just divide the cost (less what you expect to sell it or trade it in for when it is replaced) by the number of years of estimated useful life, and this is the amount to be deducted each year. In arriving at the original cost, don't forget to include freight and installation charges in addition to the price paid for the equipment.

The law now specifically permits several other methods of depreciation for new assets having a useful life of three years or more. One of them is known as the declining balance method. In the first year the depreciation rate is

twice what it would be under the straight-line method. The next year the same rate is applied to the amount remaining to be depreciated. This process is repeated each year.

The result is that a greater proportion of the cost is depreciated during the early years of the life of the asset.

Another new method, known as "sum of the year's digits," has a similar effect. You should figure depreciation on a new asset in all possible ways so that you can decide which is best for you and make the proper choice.

These methods of rapid depreciation may be particularly helpful to a company which is currently making large outlays for new equipment, but the depreciation left for the later years of the asset's life will be less than under the straight-line method. The best method depends upon the circumstances of the individual company, and is also affected by such imponderables as estimates of future earnings and tax rates during the life of the asset.

Research and Development

Another choice confronting the taxpayer is whether to treat research and development costs as immediately deductible expenses or to amortize them over a period of years. The immediate deduction is certainly a "bird in the hand" and may be very attractive to a company which needs this tax benefit to help finance the undertaking.

The company which can afford to spread the cost over the estimated useful life (or at least 60 months if the useful life cannot be determined) may find it best to do so. This is especially likely to be advantageous for companies whose income is expected to increase.

Being Taxed as a Corporation

There is a provision in the 1954 Internal Revenue Code which allows some proprietorships and partnerships to be taxed as if they were corporations. This choice should not be made lightly, as there is considerable uncertainty about the provision and the proprietorship or partnership desiring corporate tax treatment might find it better actually to incorporate.

Choice of Fiscal Year

Regulations now permit changes of fiscal year in some cases without permission of the Treasury Department. Generally it is wise to use the fiscal year which corresponds most nearly with the annual cycle of business operations, ending at the low point of receivables, inventories and loans, instead of a calendar year. This reduces the area of possible dispute over such matters as value of inventories, and has many advantages apart from tax considerations. The change should be carefully timed, though, to avoid possible adverse tax effects during the changeover period.

Sickness and Accident Benefits

Under the present tax law, payments from your company to employees for treatment of sickness or injury are not taxed as income of the employees. If the company has a plan for continuing all or part of an employee's pay while he is absent for sickness or injury, limited amounts of this "sick pay" are also tax exempt.

This applies whether the payments are made by the company or by an insurance company. In the case of a sickness requiring hospitalization even for one day during the course of the illness, or in the case of any injury, the first $100 per week of payments are

tax free. In the case of sickness which does not require as much as a day's hospitalization, the exemption begins after the first week of absence.

No great formality is required concerning the "plan" but it should be explained to employees, and appropriate records kept of the amounts paid. Proposed regulations governing tax withholding in 1956 from payments to ill employees were still under discussion when this article was prepared.

Repairs and Improvements

If you contract for repairs and improvements to your business property, be sure that these two types of work are billed separately. Should you lump them together, you may find that the entire cost has to be capitalized for future depreciation. By listing the cost of repairs as a separate item you are allowed to deduct it as an expense of the current year.

For example, you might have a furnace repaired and new radiators added. By separating the charges you can deduct the cost of the repairs in the current year, although the new radiators would be improvements subject to depreciation during their useful life.

Keeping Good Records

Many deductions are lost through failure to keep adequate business records. Be sure that you have good records to show you what deductible expenses you have had, and to back up your deductions in case they are questioned by the Government. This applies particularly to your out-of-pocket business expenses, such as travel and entertainment of customers, and to items which are deductible on your personal income tax return.

Good records and properly qualified professional tax assistance—at tax-filing time and throughout the year—are the keys to income tax savings.

"Well, boss, you know they laughed at the Wright brothers!"

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RIGHT OR WRONG

A roundup of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to WOOD WORKING DIGEST.

When can you fire a disabled employee?

What Happened

One morning Lincoln Taylor reported to the nurse, and complained that he had hurt his knee while working. He was given some heat treatments and sent home. The next day he was examined by the company's doctor, and an operation was advised. He came back to work about a month later but refused to take his old job back because, he said, it required some bending and he was unable to do this without pain. He was given a job of "light work" in the storeroom. The company didn't need an extra man in the storeroom but Taylor was put there until something suitable for him should come up. Management then tried Taylor out on three other jobs where vacancies occurred, but each time he claimed that the work was too difficult. The company finally sent Taylor to two outside physicians for a medical opinion on the kind of work he could do, in view of his bad knee.

When the medical report came down, the personnel man after analyzing its contents, offered Taylor his original job on the contention that the doctors thought him well enough to handle it. When Taylor balked, he was let out. He promptly filed a grievance for dismissal without cause. The company stood its ground. It maintained that in its opinion Taylor was malingering and that he was looking for a soft job. Then again, said the company, "we tried to

find other, less arduous jobs for Taylor and he didn't want them. (It so happens there were very few "light" jobs in the shop). We cannot create a new job to his liking, nor can we fire a more senior man to make room for Taylor." Also, the management pointed to the physicians' report as a basis for its action.

Was the company: Right ☐ Wrong ☐

What Arbitrator Paul Prasow Ruled

It is acknowledged company practice to attempt to place employees with disabilities on work they can do insofar as this can be accomplished within limits of seniority and efficiency. Moreover it might be argued that the company had a **moral** obligation to provide light work for Taylor. The record shows that supervision made repeated efforts to place Taylor in available light work, and even suggested to senior employees who held lighter jobs that they trade such jobs with Taylor. These efforts met with no success. There is no evidence to indicate that employees with **less** seniority than Taylor were working on light jobs which he could perform. It is possible that Taylor could not physically perform his work as he indicated on numerous occasions. In the last analysis pain is a subjective experience, and those who claim to suffer from it know best whether or not they can function. However in the face of medical findings to the contrary, an employee insists that he cannot perform his assigned duties, and if management makes reasonable efforts to find him lighter work and is not arbitrary or capricious in its actions or attitude, then the decision to terminate him must be considered a bonafide exercise of management discretion related to efficiency and safety in operating the plant. The grievance is denied.

Can you deny a promotion to a slow worker?

What Happened

When Velon Hacker had a spat with his foreman and quit his job, Robert Longley put in for a promotion. He'd been with the company for 24 months and was next in line. But when the job was filled the following week, Longley was by passed. He immediately griped to his foreman. The supervisor was not surprised and was ready with an answer. He told Longley that in the 24 months that he had worked in the department:

1. He had received one warning for wasting time.
2. He talked too much on the job.
3. Most of all, he took too long to complete an assignment.
4. He therefore was not entitled to a promotion even though he did have seniority.

Longley was unimpressed with the answer he got and took his case to the higher-ups. They supported the supervisor even though there was a specific policy which read: "If a vacancy occurs in any classification, the employee with the highest seniority in the next lower

classification shall have first preference to fill such a vacancy. The superintendent shall consult with the chief steward in cases where upgrading is under consideration."

When the case came to arbitration the employee argued that under this kind of policy, the company had no other choice but to promote a worker on the basis of length of service.

That's where you're wrong answered the management. If seniority were the only consideration for promotion, then why do we have a section which says that the superintendent should talk to the shop steward? Obviously the reason for that is to give the company some discretion in picking people for upgrading.

Was the company: Right ☐ Wrong ☐

What Arbitrator Harry J. Dworkin Ruled

While it may be conceded that every employee is more than likely to have different abilities, in considering whether an employee should be by passed, it should be of SUBSTANTIAL character, and refusal to upgrade should be based not upon light and insignificant reasons. Although the company contends that Longley had a "poor work record," there is insufficient evidence to establish that Longley's past performance was of so poor quality and so slow as to provide a valid reason for by passing. Otherwise, why was he kept in his job for 24 months? Moreover, according to company policy the employee with seniority "is entitled to first preference." It is the considered judgment of the arbitrator that a reasonable construction of the language of the policy requires that an employee in the next classification shall have preference unless a substantial basis exists to justify the employee being by passed. Longley should be given a chance at the job. Grievance granted.

Is an employee entitled to a merit increase if he does the same work as higher paid employees in his department?

What Happened

Walter Mattie was making $69.80 a week. Shea and Bailey, two men who worked with him, were earning $74.00 a week. All three men were working about the same number of years. Mattie demanded that he get a merit increase to bring him up to his two buddies.

"I have the same duties," he said to the arbitrator. "In fact, when one of us is on vacation we interchange jobs." The company's position was that merit raises are up to the company and it has discretion as to who gets such boosts and who doesn't. And besides, it's not up to the arbitrator to horn in on a management prerogative of this nature. The company further contended that while the men did similar work, in its opinion Shea and Bailey were more efficient.

Was the company: Right ☐ Wrong ☐

What Arbitrator I. Robert Feinberg Ruled

A merit increase may generally be said to be an increase granted an employee because of improved quality and quantity of work. It does not represent a change of job duties but on the contrary represents improved efficiency on the part of the employee in continuous performance of the same duties. It has been said that merit rating is concerned not with what an employee does but how he does it. It is recognized that determination of an employee's merit can best be made by his supervisor who is closest to the employee in these matters.

In arbitration cases of this sort it is generally held that the initial determination as to whether an employee is entitled to a merit increase shall be made by management and the conclusions of management with regard to merit increases should not be set aside unless the facts show that it has been unfair, or discriminatory or arbitrary, or that the decision has been based upon insufficient evidence. Since merit increases are not concerned with what an employee does but how he does it, Mattie's argument that he performs the same work as Shea and Bailey has no validity The grievance is denied.

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MOLDING PARTICLE WOOD INTO PLUGS

By Earl Wallis

THERE is always something new going on under the sun. In this case one man had an idea based on need; contacted two other men 1200 miles away who also had an idea—the same basically, and theirs was already in work. Result—a new use for a new mechanical design and, most important, the challenge of a new field in the age old woodworking industry, namely, the molding of ready-to-use products from hitherto waste wood scrap.

The man with the idea that his own down-the-drain loss in wood waste was needless was Gilbert Ayers, of the Dominion Prime Wood Products Company, Lachute, Province of Quebec, Canada. The men with a new extrusion method of wood waste utilization were John M. Crafton and B. W. Masengill of the Chipcraft Company, at Morristown, Tennessee, home of Davey Crockett lore. Mr. Ayers went to Morristown and—presto, after a few months a machine was molding plugs for paper rolls at the rate of 500 per hour out of waste wood supplied by Mr. Ayers' woodworking plant at Lachute. They literally made a plug to plug up the loss!

Dollar and cent-wise the particle wood plug is produced to sell under the solid plug now used—and at a profit.

Molding with chip or particle wood has relatively as bright a future as that enjoyed by plastic molding a few years ago. The opportunity seems limited only by the imagination. From finely ground thread-like chips, and even sawdust, products from cups and saucers to shoe heels, saddle seats, chair legs, belting cores, etc. are now possible and the adaption of the extrusion principle to many other products is only a matter of molds and some further refinements of automation. It's a wonderful world.

At Lachute the pieces of dried wood scrap, sawdust, and shavings are automatically reduced by hog treatment to a homogenous mix of short and long fibers. When ready, the wood chips with a moisture content of not more than 12% are first fed into an automatic metering unit where the chips are measured by weight and then into a chip and resin mixer located right below the weigh meter. The resin-urea formaldehyde is sprayed onto the mechanically agitated chips at a ratio of 7½% resin to chips by weight-o-meter control.

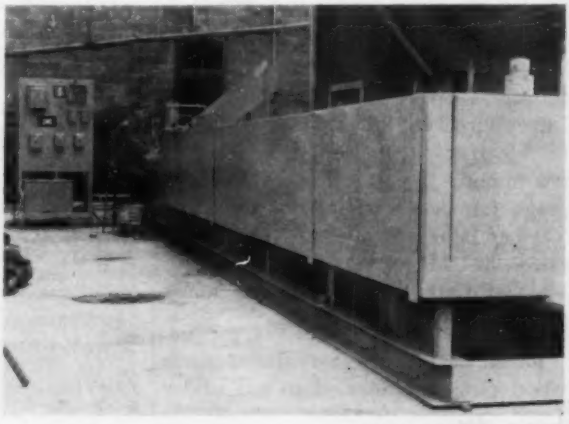
When the proper blend of chips and

Chip mix is fed manually into mold and plunger placed hereon ready for compression station and 10 minute trip through the heated oven. Ejected finished plugs are shown at operator's right in chute.

resin is reached, the mix is automatically discharged into a bin ready for the production cycle. At the Lachute installation the operation is manually controlled but is also subject to automatic control when preferred. The metering and mixing unit developed by Chipcraft engineers is automatic in that limit switches are used to determine the weight and air cylinders are used to control the flow of the material ingredients from one station to the next.

Molds used in the paper plug manufacture are tool room products very similar to those used in plastics—accurate to fractions of an inch and designed to form the finished plug so that it is ready for use without further operations or preparation. In plug making a mold and plunger are used, the mold to give the plug shape and finish, and the plunger to make the small hole in the plug. The progress of the plug from the mold filled with chip-resin mix to the finished product is detailed as follows:

The operation begins at the loading station. Here the machine operator manually first meters the volume of chips needed and then the mix flows into the empty mold. When the mold is filled, the plunger part of the mold is placed on top of the mix. The operator then actuates the indexing device by a foot switch (this can also



Plug making unit showing operator at loading station and face of electric control panel, shown in first illustration. Chute is shown in far right.

be done with a timer and can be set to index from 3 to 60 seconds) which moves the filled mold to the pressing station. The indexing device also moves an empty mold at the same time to the filling station. At the pressing station a hydraulic cylinder comes down on top of the plunger compressing the chips to the final size plug.

As the hydraulic stroke reaches the bottom position two air cylinders actuate two latch pins on top of the plunger—one on either side to hold the plunger firmly in position and the chips under compression—and the completed unit then enters the steam heated oven where it indexes through at the rate of 10 minutes to the complete cycle. The mold comes out of the oven on its own cycle into the pin ejection station. The pins holding the plunger are automatically pulled out thus releasing the plunger. At the next station the plug is automatically pushed out of the mold by an air cylinder below the mold. As the plug comes to the top of the mold a final air cylinder pushes the finished plug off into a chute leading to the container of finished plugs. At 500 plugs per hour: 100 molds are employed.

The hydraulic power is supplied by hydraulic pumps and the air by a compressor. All the operations in the line actually take place at the same time at the different stations and the entire unit is electrically interlocked so that if one operation is not properly completed, everything stops until the interrupted operation is completed. While entirely automatic except for the feeding process at the loading station, the operation could be entirely automatic except that at Lachute two sizes of plugs are used necessitating manual changing as they come around on the cycle.

Since Mr. Ayers' original idea that wood waste could be made into something other than smoke was developed, other installations are being planned for other products. Some are already at work. Molding with wood waste is just getting started and where it will go no one knows but the end is nowhere in sight at this writing!

Close-up view of loading station. Filling station is in center. Plunger is placed on top of loaded mold and is pressed down at pressing station at the left (plunger is down in illustration to show compressed position after passing through hydraulic pressing operation). At right, plunger is shown in ejected position after air has released it. As plunger is pushed up and off, plug is pushed off into chute.

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38 Years of Service to the Woodworking Industry

WOOD ADHESIVES . . . Past and Present

By Russell Gerleman,

National Casein Company

Mr. Gerleman describes the earliest animal and vegetable glues in the beginning of his article. Animal and vegetable glues have been vastly improved and are being used successfully today. Editor.

WHEN the word glue was mentioned in the industrial woodworking plant of yesterday people would hold their noses and visualize a heated glue pot cooking a foul smelling ground animal potion that was tricky to use in the winter, but did an excellent job of gluing.

Another popular adhesive of long ago was vegetable or starch glue. Many ingredients were required to make it into a glue, and a cooking process was necessary for the blending of the materials.

World War I made casein glues popular because of their high water resistance and the fine bonding qualities that were required of aircraft manufacturing for wartime use.

The woodworking industry accepted this new adhesive in industrial production when World War II exploded and another great need for aircraft parts and gliders arose. Our Forest Products Research Laboratories under the Agricultural Department tested and approved another type of adhesive called urea resins. Urea resins were the most advanced adhesives at that time and have enjoyed the greatest popularity to date. For successful use of urea resins in the woodworking industry many controls were needed. Such as a 70° F. room temperature or above, moisture control, correct mixing of the catalyst or hardener with the resin, and noting test results with flour and water extensions for cost savings, not to mention the amount of spread and the greater amount of pressure required.

Urea resins worked very well on the new type gluing machines that speeded the cure of urea resins that are thermosetting and their drying time is definitely accelerated with heat. For example, edge-gluing two pieces of wood under hand clamp pressure with urea resin at 70° F. room temperature and a standard catalyst would require 7 to 9 hours cure time. The same two pieces of wood and glue could be put into a semi-automatic press with a radio frequency generator and be cured in less

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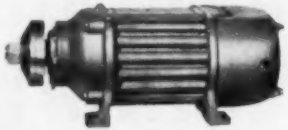

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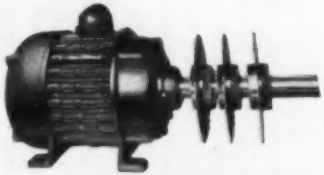

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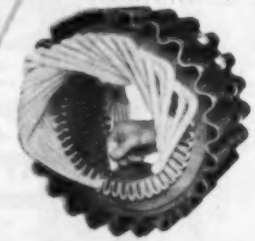

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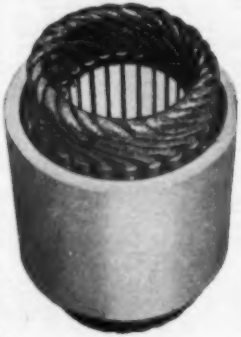

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than one minute with an equal or better joint strength than the former method. This is an amazing feat but it is used successfully as conventional equipment in many plants both large and small.

Today, resistance heaters, steam-plate edge-gluing units, oil or steam heated veneer presses work exceptionally well with a base urea resin glue and catalysts designed for the production requirements of each glue machine unit.

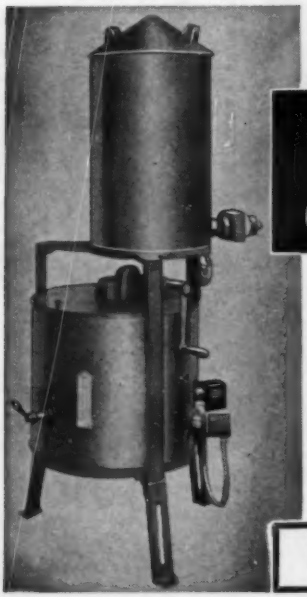
Resin glues are divided into the following classifications:

a. Urea Resin
b. Melamine
c. Phenolic
d. Resorcinol
e. Polyvinyl Acetate

These resins may be upgraded for water resistance and cost by fortifying one with the other such as a urea resin fortified with Melamine, or a phenolic resin with resorcinol. A straight resorcinol resin would cost over one dollar per lb. which is much too much of an expenditure for a production glue. Phenol or phenol-resorcinol are the popular resins used in manufacturing marine grade plywood which will pass the government specifications for exterior plywood.

A new type of urea resin is one that is known as a non-craze or gap-filling resin. It is a patented glue which, in effect, is a specialty glue. This glue is ideally suited for low pressure laminating, high frequency glue jigs, quality plastic top laminating or durable glue joints that must resist shock or cracking of the glue line.

Another very popular ready-mixed plastic resin glue is known as a polyvinyl acetate emulsion. It is white, fast setting and ideal for production



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assembly work. Since its introduction to the industry on a large scale usage due to the animal glue shortage of World War II, this adhesive has graduated into more and more industries other than wood. These industries are the bookbinding, paper and carton field, and, more recently, the paint industry.

Vinyls in woodworking are being upgraded into wider applications other than joint work or small assembly gluing. The indications are that the combination of vinyl and urea resin will make their application popular for the different machine gluing operations now confined to the aforementioned resins other than vinyl.

This urea-vinyl combination should develop an adhesive that is faster setting than are urea resins now, with added water and heat resistance that vinyl glues do not now possess. The outlook of progress in adhesive development is bright and promising.

The industrial adhesive industry is fast being converted to bulk deliveries in tank car and tank truck for the cost savings involved. Woodworking plants are installing their own bulk storage tanks.

Societies such as the Forest Products Research Society are constantly interested in utilizing waste wood and the development of new uses for wood over competitive materials.

Along with the utilization of wood waste such as cut-offs and other reject sizes of lumber that were destined for the fire hole, a new process has been developed to use this material. This process develops what is known as particle board. The tons of waste material in these particle board plants are sent through a hogger, a unit that

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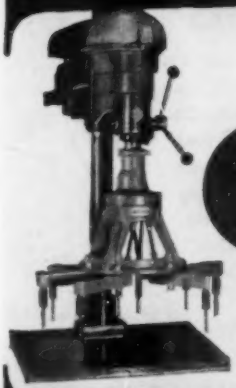

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cuts up the waste pieces and converts them into graded wood chips. These graded chips are mixed thoroughly with a urea resin and hot pressed at high pressure into particle board, in sheets of standard size and thickness. Particle board offers an attractive new texture for the texture-conscious American public. Particle board has found several applications in the woodworking industry and its advantages are that it is less affected by moisture, it offers control of quality against defects, and it machines and glues much like wood because it is wood, man-made and well done.

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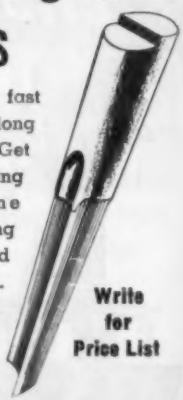

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CARBIDE KNIVES SCORE IN Production Test At Baker Furniture Co.

A PRODUCTION test involving 26-inch solid carbide planer knives at Baker Furniture Co., Holland, Mich., indicates that users of such knives can expect a tool life of 25 times that of steel knives, save almost 16 man-hours of grinding time between grinds, and pick up extra production time usually lost during machine shut-downs for knife changes.

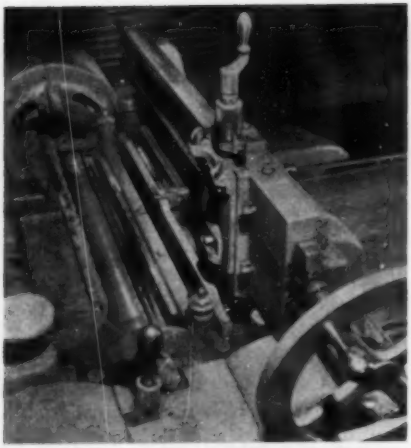
According to the test, the 26-inch solid carbide planer knives, manufactured by Carboloy Department of General Electric Company, Detroit, ran more than 500 hours, since being installed in a Buss Machine production planer.

Before the test started, Buss Machine Works, also located in Holland, checked to make sure that the planer knives could be ground accurately while in position in the head of the machine.

The planer is employed by the custom furniture maker in the rough milling line to plane rough sawed, kiln dried dimension lumber to proper thickness.

The complete rough mill line at Baker is composed of a cutoff saw which cuts the stock to proper length; a jointer for surfacing the bottoms of the boards paralleled to the opposite rough faces, allowing for warpage; a planer which surfaces the top rough

Cutoff is first operation in rough mill line at Baker Furniture Co. Company uses saws tipped with Carboloy grade 883 carbide for the operation. The wood then travels to a jointer, then the planer. Mirrors are used both at the saw, to check for cracks, and at the jointer to prevent jam-ups.



Closeup showing the 26-inch solid Carboloy carbide knives mounted in a Buss Machine planer. During the operation, belt conveyors keep the wood traveling through the planer automatically.

side and takes the boards down to proper thickness; an edge jointer which planes the edges of the boards and straight-line rip saws which rip the boards into narrow strips.

To date several species of lumber have been run through the planer—red and white oak, cherry, teakwood, hard and soft maple, yellow poplar, mahogany, walnut and ash. The rough stock processed measures ¾″ to 2½″ thick, 2″ to 26″ wide, varying in length from 4′ to 16′.

Wood processed through the planer is used either as core stock for veneered panels or as furniture legs, drawer sides and other components for furniture. The operation is important because dimension lumber after drying is too warped for use in assembly, and rough sawing does not allow close enough dimensional control. Core stock especially must be flat to allow clamping.

Surface finish of wood before going through planer, left, and after being planed by the 26-inch solid Carboloy carbide knives.

The solid Carboloy carbide knives used in the production run measure 5/32″ x 1¼″ x 26″. The 5-7/16″ diameter four-knife cutterhead on the planer operates at 3600 r.p.m. with a stock feed of 80 f.p.m and 1/16″ average depth of cut. The Carboloy knives are performing satisfactorily on both dense, highly abrasive material such as teakwood, and on less dense woods such as yellow poplar.

The high-speed steel knives formerly used on the planer operated an average of 2½ days or 20 to 25 hours between grinds. This meant that they would have to be ground at least 25 times and set out twice during the period the carbide knives were ready for their first grind.

Since it takes about ½ hour to grind the steel knives, and 1½ hours to adjust them outward in the cutterhead, about 15½ man-hours would be required in servicing them as against one servicing for the carbide knives.

NEW LITERATURE

NEW CLAMP BOOKLET

A 20-page, pocket-size booklet detailing at a glance the company's full range of clamps and handscrews has been issued by Wetzler Clamp Company, 43-15 Eleventh St., Long Island City 1, N.Y. Completely illustrated, the booklet includes diagrams, specifications and photographs of the products in use.

Clamps shown are industrial quality, used both in wood and metalworking. They include special purpose items such as welders' clamps, drill press clamps, heavy duty bar clamps and the Wetzler "Glue-Shield" handscrews whose soft metal jaw inserts protect fine wood and metal finishes.

THE WEL-DRI KILN

A new dry kiln which has many advanced construction and operational advantages is described briefly in a bulletin published by the manufacturer, The Wel-Dri Company of Memphis, Tenn.

Among features designed to eliminate operating problems is the use of prelubricated equipment throughout, including an oil-less compressor which delivers oil-free compressed air for instrument operation. High-speed airplane-type propeller fans are standard equipment. Direct-connected motors eliminate belt replacement and power loss through belt and shaft arrangements.

The Wel-Dri kiln is particularly suited for the small-volume operation.

SCREW BOOKLET

The "inside" story at Southern Screw Company is now available through an attractive new booklet which has just been released. This booklet starts at the beginning when "Southern" was just a dream and carries through to the present day reality of a completely new and modern plant covering 240,000 square feet and maintaining the highest standards in quality and service for fastener production and delivery.

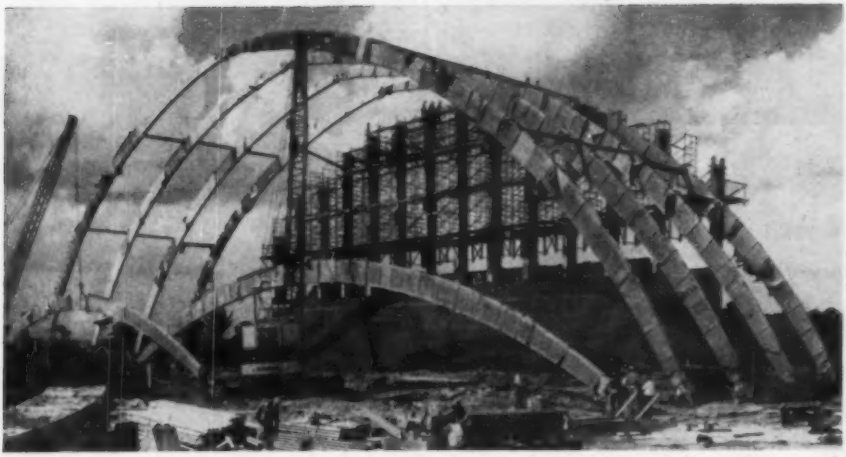
This booklet is generously illustrated. Shown is Southern's new plant, its interior, its products, and its packing containers and labels. Southern's nationwide distribution is emphasized.

Address your request for a copy to Southern Screw Company, P. O. Box 1360-SB, Statesville, N. C.

PACKAGE TESTING BOOKLET

Manufacturers who package their merchandise in corrugated boxes will find valuable information regarding the testing of their packages in the new edition of a Little Packaging Library booklet—"How To Test Corrugated Boxes"—just issued by Hinde & Dauch, Sandusky, Ohio.

Designed to acquaint producers with the importance and the techniques of package testing, the new 24-page booklet offers a comprehensive check-list by which to judge the protective qualities and general efficiency of specific corrugated boxes. Individual checks to which boxes are normally subjected are described and illustrated in detail. Testing terminology is fully defined.



Jai Alai fronton club at West Palm Beach, Fla. Twelve of these huge arches will be used.

LAMINATED TIMBERS Set Precedents in Construction

THE new Jai Alai Fronton at West Palm Beach, Florida, is the first building of its type and the methods of construction are so different and so effective that architects everywhere may be influenced by the precedents set.

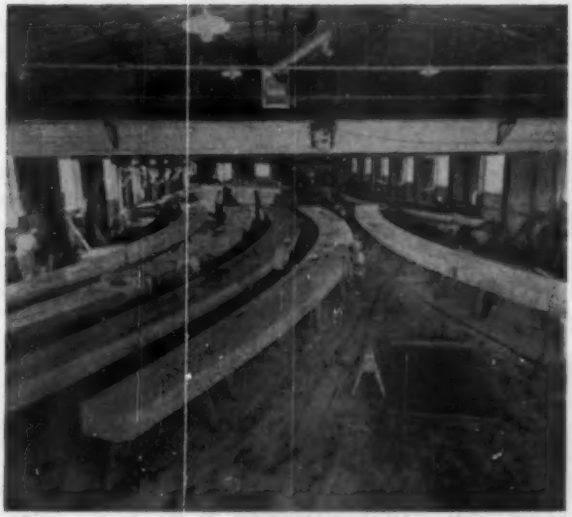
Fronton means court, and as the name implies, this new building will be a mammoth sports center where 3,500 spectators will be able to watch Jai-Alai —the national Spanish game now growing popular in the United States.

This is a fast dangerous game which requires a large indoor playing area unencumbered by posts. Such an area was provided by use of the largest glued laminated wood arches ever manufactured.

There are only 12 arches in all, but they are the sole structural support for the entire building. The economy of their fabrication and the ease of their erection, plus the complete simplicity of design and structure, prompted the builders to describe the technique as a "major discovery."

Hinged to buttresses, the arches soar to a height of 80′ at the crown—equivalent to eight stories in a building. Each arch has a clear span of 247′, a lineal arc measurement of 340′. The clear span is nearly 50′ greater than that of any wood arches manufactured previously.

The arches are of glued laminated Southern Pine lumber. Standard sizes of 2″ thick Southern Pine lumber were glued and shaped through the use of specially engineered presses. The arches were shipped to Florida by train from



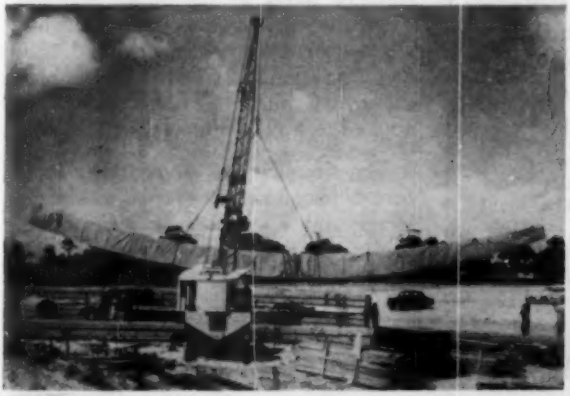
Interior shot of Unit Structures plant, Magnolia, Ark. Workmen are applying finish to arch sections.

the Magnolia, Arkansas, plant of Unit Structures, Inc.

B. T. Richterkessing, manager of Steel Erectors, West Palm Beach, which assembled and raised the arches, said that he was so satisfied with the speed of the operation and with the performance of the arches that he would like to use even bigger arches in future heavy construction jobs.

What has prevented use of wood arches of this size before has been the inability of transporting such large structural members from factory to job site. The problem was solved by the development of a three hinged arch with an unusual splice joint. This occurs near the point of maximum stress and involves the use of lag screws and shear plates.

Because of the splice joint it was possible to fabricate the arch in four



Only two derricks were required to handle arch sections at job site.

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sections, which were shipped without difficulty and assembled on the job site with a minimum of personnel.

The arches are also unusual because of variance from the usually constant cross section. At the crown, the cross section measures 20″, at the base 25″, and at the point of maximum stress, 46″.

There are two big economy factors, the first in fabrication, the second in erection.

In fabricating the arches it was possible to build them to the desired thickness at the point of maximum stress simply by adding a few laminates. If steel had been used, expensive welding would have been required at this particular point.

Secondly, construction costs were kept down by the simplicity of assembly and erection. A few men quickly applied the base and crown connectors and the splice joint, while the sections were resting on the ground. Two derricks joined in then, and raised the arch sections (two instead of four once the splice joint had been applied) so that the crew could make the base attachment or hinge by use of a metal pin. Then the derricks raised the two half sections to their full height, and crew members again used pins to complete the crown hinge. Finally, struts were applied to link each arch with the next.

The simplicity of the resulting structure is phenomenal. The 12 arches, the struts, and 4″ wood roof deck secured directly to the arches comprise the entire structure.

The architects for the project are Spicer and Gehlert of Daytona Beach, Florida. All of the Southern Pine lum-

ber used in the arches was grademarked. At various phases of fabrication, moisture content was checked by inspectors of the Southern Pine Inspection Bureau.

Finally, a word on the game of Jai Alai. The game originated in the Basque country of Spain in the 17th century, and actually is a combination of tennis, handball and lacrosse.

The balls are about as large as a baseball and very hard. They are cast at high velocity against the end wall of the court and must be received, caught, and tossed again through the use of a "Cesta"—a basket like contraption attached to the player's arm. The players are professionals from Cuba and other Latin American countries. There is much betting in connection with the game.

COLONEL WM. B. GREELEY

Colonel William B. Greeley, dean of American forestry, outstanding lumberman, soldier and author, died at his home on Port Gamble Bay, Washington on November 30 after an illness of several months.

Seventy-six years old at his death, Colonel Greeley played a dominant part in the growth of forest management in this nation since 1904, when he joined the budding U.S. Forest Service.

RECORD TURNOUT

More than 25,000 persons from the home building industry are expected to attend the National Association of Home Builders Annual Convention and Exposition in Chicago January 22-26.

This record-breaking turnout will see the world's largest building products show and take part in the most comprehensive convention program in the association's history, NAHB says.

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NEW DOUGLAS FIR PARTICLE BOARD IS ANNOUNCED BY WEYERHAEUSER

A new type of panel material manufactured from graded and classified particles of Douglas fir is announced by the Weyerhaeuser Sales Company of Saint Paul, Minnesota. Manufacture has started at the company's Coos Bay, Oregon, plant. Weyerhaeuser 4-square particle board is a wood product in changed form and with new characteristics. By breaking wood down into fine particles and then reassembling these particles into finished panels of various sizes, thicknesses, and types, a superior panel material has been produced that retains the desirable properties of lumber, plus some new ones. This new product has high dimensional stability. Because of the particle assembly, there is no tendency to warp, twist, or split.

A Man-Made Wood Product

In the manufacture of this new panel product, Douglas fir shavings are dried to a closely controlled moisture content, and reduced to small wood particles that are screened and classified by size. These particles are coated with the required additives, felted into a loose mat approximately 50" x 98", prepressed to reduce thickness and then pressed to the desired thickness and density in a heated hydraulic press. Following this operation the board is placed in an equalized chamber to cool and equalize to proper moisture content. The board is then trimmed to proper size and sanded to a smooth even surface on each side. Strict quality control is maintained in all phases of production.

The resulting product is wood reconstituted. Grain and knots have been eliminated; various properties and characteristics have been changed. The small, precisely shaped particles of Douglas fir thus rearranged and bonded into board form results in a highly adaptable product which conforms to modern, high speed manufacturing requirements.

MACHINABILITY of Weyerhaeuser 4-Square Particle Board is demonstrated in this photo. Panel has taken dovetailing cleanly without tearing or loosening of the Douglas Fir particles from which the board is made. This is typical of its performance in woodworking operations of all kinds.

An Ideal Core Material

Because of its remarkable flatness, smoothness and stability, Weyerhaeuser 4-square particle board is an ideal base for wood veneers, decorative plastics, metals, or other types of decorative surface. It can be permanently bonded to decorative plastics or wood veneers with hot or cold setting glues. Its smooth uniform surface and dimensional stability eliminate the need for cross banding although a balancing surface of veneer, plastic or hardboard should be used if the same material is not used on both sides.

Generally speaking, Weyerhaeuser 4-square particle board can be worked with any equipment suitable for wood. It can be sawed, dovetailed, routed, grooved, drilled, and can be edge-banded with wood, metal or plastic moldings, or edges can be treated with special putties. Panels cut cleanly permitting smooth fitting miters; can be joined by edge gluing, doweling, rabbetting, splining, or other customary joint treatments. Board has excellent screw-holding characteristics both perpendicular to itself and in edges.

Uses for this new product as a core material are dinette table tops, sink tops, counter tops, bar tops, tops for many types of furniture when surfaced with decorative plastics; for tops, fronts, and end panels when surfaced with wood veneers. It may also be used for cabinet or wardrobe sliding doors, and when veneered with fine woods in large panels, for interior architectural surfaces.

This particle board is currently being produced in thicknesses of 3/8", 1/2", 5/8", 3/4", 1" and in different densities to meet different needs. Standard panels are 4' x 8'. Smaller sizes can be furnished precut to individual requirements.

Science has been producing so many substitutes recently that it's hard to remember what it was we needed in the first place.

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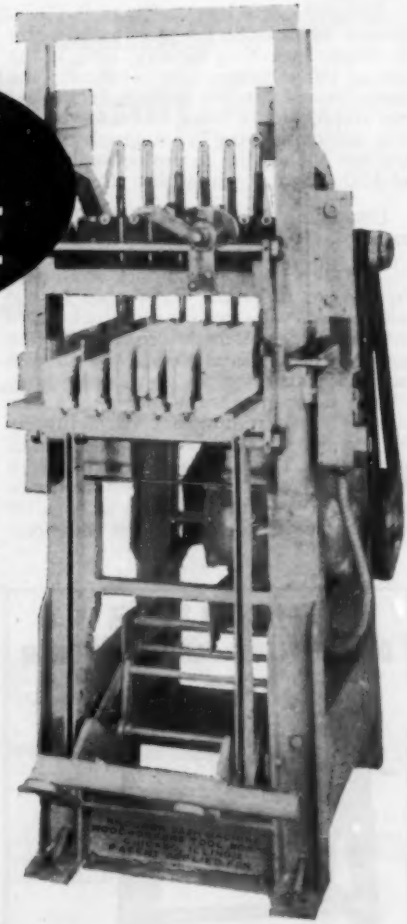

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In the art of sash making (combined check rail slotter, tenoner and coper). Designed especially for cost-conscious and efficiency-minded managers . . . saves time and labor. THE KNOUREK sash machine has six stations permanently set up to slot top and bottom check rails, cope top and bottom rails and stiles.

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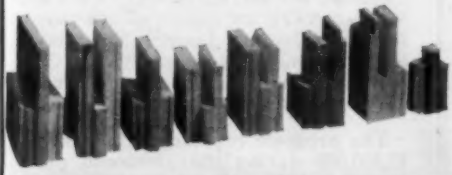


Note machine stations are loaded with two bars and rails in each for large production.

WOODWORKERS TOOL WORKS
222 S. JEFFERSON ST. CHICAGO 6, ILL.

PROTECTION FOR FLITCHES

An interesting innovation at the local veneer manufacturing plant of Chester B. Stem, Inc., New Albany, Ind., is the use of polyethylene film plastic for the protection of flitches while they are being stored before being cut into veneer. The accompanying photograph shows the use of this film in protecting a stack of Idaho knotty white pine flitches.

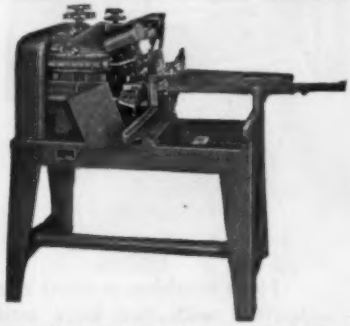
Discussing this innovation, R. K. Stem says:

"We like to keep a supply of flitches in storage in order to be able to cut veneers to the various thicknesses which our customers require. In the past we have found that if the flitches are not protected in some way they check severely on the sides in a few days. We are finding that this definitely is avoided by the use of this plastic protection. The plastic material is very tough, and it is not too expensive to be used to cover our lumber piles after they come out of the kiln, in the event they must be left outdoors through some emergency. We also use this plastic to protect our piles of pine crating, to keep them from getting wet and turning black."

Veneer flitches protected with plastic film.

HARRIS

DELUXE FLOOR MODEL TENONER



New adjustment allows exact and simultaneous adjustment of tenon spindles.
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Heavier Construction for greater accuracy.

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U. S. PLYWOOD CAMPAIGN

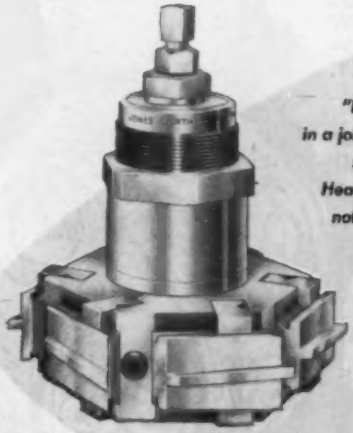
The United States Plywood Corporation's current advertising and sales promotion program is presently being introduced to the Company's sales family as the "Twin" or "Silent Salesman."

This program or giant super salesman, whose silent but highly effective messages are carried to U. S. Plywood's multi-markets by means of newspapers and magazines, is described in a booklet being distributed among the Company's division, mill and branch managers and sales representatives.

The program represents an outlay of $1,800,000 during the 12-month period from late 1955 and on into 1956.

Copies of the booklet which promotes sales of all the company's products are available from the U. S. Plywood Corp., 55 W. 44th St., New York City.

"The sweetest running units in the plant!"



"I sure don't want any EXTRA worries in a job like mine! That's why we standardized on JONES & ORTH Cutter Heads a good many years ago. There's nothing in the plant that gives us better output per dollar with less grief, than these heads do. We're fussy about quality here too!"

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It's no accident that you get more for your money in our cutter heads. After all, that's all we make . . . just the *finest* cutter heads that money can buy! Our specializing pays off . . . *for YOU!*

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Write today for the name of our dealer nearest you! Address either our Seattle or Memphis branch.

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THE MEDIAEVAL GUILD CRAFTSMAN WHO TRIED TO PASS OFF SHODDY WORK TO A CUSTOMER WAS IN GRAVE DANGER OF HAVING HIS **EARS** LOPPED OFF!

— AL REETZ

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FINISHING SECTION

Furniture Finishing

Color Coordinated Finishes For Furniture

FURNITURE FINISHING

Part 9

By

HAROLD B. GATSLICK

THE word "lacquer" was derived from the word "lac" relating to the excretion of lac insects which, on processing, is called shellac and came to be a descriptive term for thin-bodied, hard, clear, colorless finishing materials. Modern industrial usage now has limited the term lacquer almost exclusively to coating materials containing nitrocellulose, ethyl cellulose, cellulose acetate, benzyl cellulose and other film-forming chemicals incorporated with natural and synthetic resins and plasticizers in volatile solvents.

The use of nitrocellulose lacquers for furniture topcoats was one of the most important factors leading to streamlined production furniture manufacture. The primary advantages exhibited by nitrocellulose lacquers were the fast drying effected by evaporation and the formation of uniform films with good physical and chemical properties. These latter properties could be adjusted for specific production requirements and the manufacture and control could be approached on an almost purely technical basis due to the nature of the ingredients.

The primary disadvantages of lacquers were the low solids content and the relatively high cost. A partial answer to the cost and solids content drawbacks has been the development of the so called hot spray process whereby spraying viscosity is controlled by temperature and greater build can be obtained with fewer coats than with conventional cold lacquers. Developments in hot lacquer spraying will be discussed in detail later.

Lacquers have shown marked volume increases in use by the furniture industry in the past 30 years and have been the leading topcoat material for the past decade.

Materials

Nitrocellulose is the most common basic film-forming ingredient and functions in lacquer as the drying oils function in varnish. Nitrocellulose is manufactured by treating cotton linters or cellulose derived from wood with a mixture of nitric and sulfuric acid until the desired degree of nitration is obtained. The percentage of nitrogen in nitrocellulose for lacquer manufacture ranges from 10.5% to about 12%. Explosive types of nitrocellulose have a nitrogen content of 12.2% or more. The nitrogen content of cellulose trinitrate is 14.14%. The degree of substitution is between 1.75 and 2.25 of the three hydroxyl groups available for

substitution in each glucose anhydride unit.

Several types of nitrocellulose are available. Regular-soluble (R.S.) nitrocellulose has a nitrogen content of 11.8% to 12.2% by weight. Alcohol-soluble (A.S.) nitrocellulose has a nitrogen content of 11.4% to 11.7%. Spirit-soluble (S.S.) has a nitrogen content of 10.8% to 11.1%.

The primary difference in the three types of nitrocellulose relates to alcohol-solubility with the R.S. being soluble in alcohol with esters or ketones, the S.S. being completely soluble and the alcohol-soluble intermediate. All three of the above types are available in several viscosities. The R.S. ½-second type is the one most generally employed in the manufacture of furniture lacquers.

The viscosity of the nitrocellulose, which is directly related to the degree of polymerization or the length of the nitrocellulose molecules, is a major factor relating to formulation, film-forming properties and solids available in a production lacquer. In general, lower-viscosity nitrocellulose is more soluble and cheaper to formulate at higher solids percentages than high-viscosity nitrocellulose. Some degree of durability in the final film is normally sacrificed in order to produce lacquers at spraying viscosities with sufficient solids to minimize the number of coats for a reasonable build and an acceptable surface coating.

The nitrocellulose-solution formula must meet the following specification on a weight basis: 12.2% dry nitrocellulose, 22.0% No. 1 denatured ethyl alcohol, 17.5% ethyl acetate and 48.3% toluol.

From the standpoint of volume of production, nitrocellulose is the most important of the cellulose derivatives employed, but is not the only one and it can be used in conjunction with other commercially available derivatives. These would include cellulose acetate, which has good stability, permanence and reduced flammability. Cellulose acetobutyrate has good non-yellowing characteristics, good moisture resistance, is less reactive in numerous reagents and minimizes the fire hazard.

Cellulose acetopropionate yields hard, flexible, transparent films and has a much wider solvent range than many of the other cellulose derivatives. Ethyl cellulose offers solubility in cheaper and non-flammable solvents as well as good elasticity and acid and alkali resistance.

Solvents

Lacquer solvents are divided into three primary classes. These are true solvents, the latent solvents and the diluents. The true solvents are good nitrocellulose solvents, such as esters and ketones. The latent solvents are alcohols which mixed with true solvents become excellent nitrocellulose solvents. The diluents are petroleum thinners and coal tar products which are solvents for the resins and reduce the over all lacquer cost. A balanced solvent mixture is required to make a satisfactory lacquer, to secure a homogeneous film and to reduce the blushing tendency. The lacquer solvent system should be non-hygroscopic and not miscible with water. The choice of the solvents and their relative properties for any particular lacquer formulation requires considerable study and evaluation.

Many factors beyond solubility must

be taken into consideration. These would include such things as the odor, clarity, not only in the original liquid but during storage, toxicity, boiling point and evaporation rate and molecular weight. Solvents are classified according to their boiling points. Low boilers have a boiling point below 100° C., medium boilers have a boiling point between 110° C. to 145° C., high boilers between 145° C. to 170° C., and extra high boilers above 170° C.

Low boilers reduce viscosity, evaporate rapidly and generally have pleasant odors and are rather inexpensive. Low boilers include solvents such as ethyl acetate, isopropyl acetate, methyl ethyl ketone and acetone. Medium boilers tend to retard blushing and impart good flow characteristics. Butyl acetate, butyl alcohol and amyl acetate are typical medium boilers. High boilers give gloss and smoothness to the finish, impart final flow and act as residual solvents. Ethyl lactate, diacetone alcohol and butyl propinate are high boilers. Extra-high boilers would include butyl cellosolve, butyl lactate and octyl acetate. Because of their slow evaporation rates, these solvents are used primarily in brushing and specialty lacquers where an extended flow period is required and blushing is a continuous problem with standard formulations.

Resins

Although resins are used in relatively small quantities, they are a very important part of a lacquer formulation. Both natural and synthetic resins are employed although the syntheic resins, particularly the alkyds and phenolics, find wide usage in the formulation of furniture lacquers. A more detailed description of these resins is given in the varnish section. Resins perform several functions in the lacquer formulation. These include increased adhesion, gloss, luster, brilliance, water and chemical resistance, body, depth and solids content without materially increasing cost or viscosity.

"Winning that $64,000 question has sure made a difference in Twigley."

Plasticizers

Plasticizers primarily improve the flexibility of the finish by counteracting the brittleness of the easily checking, straight nitrocellulose film. Plasticizers may be mobile liquids, oils or resins. They must meet certain requirements which would include the following:

1. Compatibility with nitrocellulose and resins.
2. Solubility in lacquer solvents.
3. Permanent flexibility due to non-volatility.
4. Low moisture permeability.
5. Lack of residual odor.
6. Non-yellowing on prolonged aging.

7. Improved final film leveling.
8. Chemical stability.

The following are some of the more common chemical and oil plasticizers now in general use:

Chemical Plasticizers	Oil Plasticizers
tricresyl phosphate	raw castor oil
dibutyl phthalate	treated linseed oil
diamyl phthalate	treated soya oil
ethyl abietate	blown castor oil
	rape seed oil

The plasticizer molecules reduce the tensile strength and rigidity normally created in an unplasticized nitrocellulose film by blocking the active polar chemical groups. The shape, form and molecular weight of the molecule and its affinity for nitrocellulose as opposed to the relative attractiveness to like molecules determine its effectiveness as a plasticizer. Another factor relating to the film properties affected by plasticizers appears to be somewhat analogous to annealing with metal and glass. Defects appearing spontaneously in a nitrocellulose film usually indicate a lack of stability beginning with its deposition from solution. In effect, the plasticizers can decrease the stress development in drying and consequently help to produce a more stable coating.

Another consideration in plasticizer action relates to the amount and type of resin in the lacquer formulation. The resins themselves, of course, tend to plasticize to a limited extent by separating the polar bonds of the nitrocellulose macromolecules. The quantity of resin and the compatibility of the resin and plasticizer must be taken into consideration. Low-solvency plasticizers may therefore possess somewhat greater plasticizing powers in high-resin lacquers than they would in a low-resin lacquer.

Since temperature affects the flexibility of nitrocellulose films as well as the dispersion of the plasticizer molecules, the temperature of the substrate as well as the application temperature should be considered in formulation. Considerable work has been and is being done on plasticizers and plasti cizer action in lacquer.

Coloring Pigments

Generally, clear lacquers are used for furniture finishes but many colored lacquers are available with dyes and pigments incorporated. The pigments used in lacquers are normally those with the greatest strength and hiding capacity and low oil absorption. In addition to coloring the lacquer, pigments also protect lacquers for exterior use by preventing penetration of the actinic rays of sunlight which cause rapid decomposition of a clear nitrocellulose film. A brief discussion of color pigments and dyes is given in the section on staining.

Flatting Pigments

Flatting pigments such as aluminum stearate, zinc magnesium silicate and palmitates of aluminum and zinc are incorporated in clear lacquer to produce flat and dull finish effects.

Furniture Lacquers in General

Furniture finishing lacquers are formulated to yield flat, semi-gloss or gloss finishes, with the latter constituting the largest volume. The prime attributes of a good gloss lacquer in addition to a fast drying period would include good flow and build, high print resistance, high resistance to water and alcohol with durability and affinity for easy rubbing and polishing. Normally, sacrifice of certain ideal characteristics must

be permitted to allow for an economic production-wise lacquer. In formulation, one to three parts of resin to one part of nitrocellulose are generally employed. Plasticizer ordinarily approximates 30% to 50% of the weight of nitrocellulose resins.

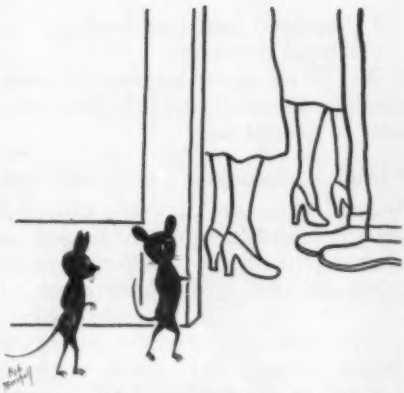
Total solids in cold lacquers will vary from 12% to 35%. Hot spray lacquers will occasionally reach 50% solids at heated spraying viscosity.

Hot Spray Lacquers

It was not until after World War II that satisfactory equipment was developed to allow production use of higher solids lacquers formulated for hot spraying. Several equipment and materials manufacturers developed equipment and investigated the use of hot spray lacquer systems and today industrial use of hot lacquer systems is gaining increased acceptance.

It was found that for a given-viscosity type of nitrocellulose at a spraying viscosity of 40 centipoises, the solids content of lacquers may be increased approximately 35% to 40% by increasing the temperature from 25°C to 70°C.

The primary advantages of the hot spray application process lie in the economies in material and labor costs. Greater film thickness can be obtained for each pass of the spray gun with less tendency to sag than normal cold spray lacquers. Coverage per gallon is increased and solvent costs per pound of solids applied are reduced. The quality of the lacquer can be improved by using higher viscosity types of nitrocellulose or a higher ratio of nitrocellulose to resin without changing the solids content.



"Now watch me separate the women from the men!"

Other reported advantages include improved "flowout" and reduced tendency to blush. The solvent composition normally used for your cold spray lacquer must be modified if you go to hot spray application with increased total solids.

In quality finishing, hot lacquers at 30% solids with a 50% build increase per coat has been found to give excellent results. That is to say, if a finisher was using three coats of cold lacquer, he could get equal build, cost savings and reduced production difficulties by using two coats of hot lacquer.

Hot spray lacquers are a decided improvement for many quality finish applications; however, they are not a cure-all for production ills. Attempts to use solids in excess of 35% and heavy builds present problems in flowout, solvent release and inherent stress in the finish.

In hot lacquer formulation, it is advisable to eliminate fast evaporating solvents such as acetone, ethyl acetate and methyl alcohol.

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Application

Lacquers may be applied by brushing, dipping or spraying and are specifically formulated for the application method to be employed.

In the application of lacquers by any of the three methods, it is imperative that the surface of the material be clean, dry and free of oil or wax, or adhesion will be impaired and a high-quality finish cannot be obtained.

Lacquer may be air dried in 15 minutes to 2 hours. The recommended time between coats is four hours. Twelve to forty-eight hours should be allowed for drying the final topcoat before rubbing. Shorter periods can be employed if a forced drying system is used.

1. Brushing—Quick application with a soft-bristle flowing brush is essential.

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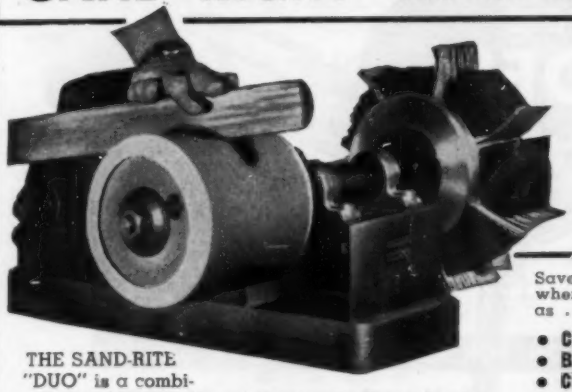

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A second coat must be applied rapidly or the solvents may cause excessive softening of the undercoat. In brush application, the lacquer should be applied in one direction with the fewest possible number of strokes. Industrial brushing lacquers for furniture require formulation to allow good leveling and, consequently, require the use of slow evaporating solvents, latent solvents and diluents. Brushing lacquers are not often used in production furniture finishing since the primary advantage of lacquer is the fast drying time and their formulation requires a complex, expensive, slow-drying solvent mixture.

2. Dipping—Dipping methods are used for many types of furniture, particularly those items, such as chairs, that do not lend themselves to spraying by nature of their design and where high material loss would result if spraying were employed. Dipping formulations also contain a higher proportion of slow evaporating solvents because of the open tanks used in this operation. Viscosity must be continually checked and adjusted and a certain amount of sag is expected. In general, dipping is used for only moderate- and low-cost items. The viscosity of a dipping lacquer is normally maintained at a lower level than for spraying in order to minimize the sag problem.

3. Lacquer spraying—The high volatility of lacquer solvents requires proper spraying methods if a quality finish is to be obtained. The following general rules might be suggested for good lacquer spraying:

a. The spray nozzle should be held approximately 8" from the item being sprayed. Shorter distances allow the

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atomizing air to ripple the wet film whereas greater distances reduce the amount of volatiles affecting improper flow and results in a non-uniform spray pattern.

b. The air pressure for spraying should vary with the viscosity of the lacquer, the volume of lacquer sprayed per minute and the relative sizes of the air and liquid openings in the gun. In general, a minimum pressure to give proper uniform atomization should be used.

c. The width of the spray fan should be adjusted according to the size of the article being sprayed. Wide fans cause approximately twice the material loss as a narrow round fan and increase the probability of orange peel.

d. The thickness of film will vary somewhat with the lacquer formulation. Overall film thickness is not necessarily the criteria of a quality finish.

e. Most lacquer films lack sufficient flow to smooth out imperfections in the undercoats. Therefore, the least number of coats should be applied since the flow defects of the individual coats may become additive and final rubbing will not eliminate the built-in irregularities. In spraying large articles, a second coat is recommended while the first coat is still somewhat wet, thereby allowing greater flow in the second coat. Because of the flow characteristics of lacquer, the viscosity at spraying is critical. Low viscosities are uneconomical because they involve expensive thinner loss and are low in solids. On the other hand, high viscosity lacquers produce excessive orange peel.

f. Temperature of the air as well as

that of the lacquer and the item being sprayed must be controlled within close limits for minimum defects. The rate of evaporation of ordinary lacquer volatiles increases about three per cent for every rise in temperature of one degree Fahrenheit.

g. The spray fan must be pointed perpendicular to the surface being coated or variation in film thickness will result.

h. The spray gun must be moved parallel to the surface being coated or the film will not be uniform.

A screened air intake is recommended to prevent dirt from being sucked into the air supply system. Air pressures from 35 lb. to 80 lb. per square inch are employed for lacquer atomization. With a conical type of spray adjustment, spraying distance is increased up to 12".

Application Problems

There are numerous problems relating to lacquer topcoats that may be the result of faulty application and/or formulation. Many of these problems are not confined to lacquers. They also will develop with varnishes. The following problems or troubles are some of the most common encountered in lacquer finishing of furniture.

1. Blushing—When a lacquer coat turns gray or white instead of remaining clear and transparent, the film is said to blush. Blushing is caused by:

a. Too rapid evaporation of solvents cooling the film below the dew point of the air, thereby affecting moisture condensation in the film

b. Incompatibility of lacquer ingredients

c. Excessive moisture or oil in the compressed air line

Blushing can be prevented by controling the temperature and humidity conditions in the plant, using a higher

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proportion of less volatile solvents in the lacquer formulation and by using adequate filters and maintaining drains on the air lines.

2. Bubbling—The formation of bubbles in the partially dried lacquer film is normally termed bubbling. This condition is caused by entrapping air and other gases in the film and may relate to improper spraying technique or solvent balance of the formulation. The formulation may have an insufficient quantity of slow evaporating solvent which allows the surface to dry before the volatile solvents can escape from the film. If excessive pressure is used, air and solvent bubbles may be entrapped within the film. If the spray gun is held too far from the work, too large a proportion of the solvents may volatilize, affecting improper flow properties.

3. Blisters—The spraying of heavy coats of lacquer on unfilled or improperly filled woods or the use of high drying temperatures and any other condition that will affect improper adhesion can cause the raising and separation of the film in the form of blisters. Proper surface preparation, filling, filler drying and temperature control of the surface and lacquer will eliminate this problem.

4. Bridging—The application of a lacquer film over improperly fitted joints and sharp moldings may form a lacquer bridge which will break or chip during use. Uniform moisture control of parts, proper machining tolerances and careful spraying can eliminate or minimize bridge formation.

5. Orange peel—When a lacquer coat lacks proper flow characteristics and does not level completely, it appears like the rough skin of an orange and is known as orange peel. It may be caused by failure to maintain the proper distance between the gun and work, excessive pressure, too rapid solvent evaporation or by the use of inferior thinner.

6. Pinholes—The development of pin-like holes in a lacquer finish may result from improper filling or improper drying of the filler. Pinholing may be caused by the presence of water or oil in the air lines. Since both are incompatible with the lacquer, they may remain as little submerged globules which are released in rubbing. The use of adequate drains and daily bleeding of lines and tanks can often eliminate pinholes formed from oil and water globules.

7. Runs or sags—Application of too heavy a film frequently results in sagging or running. Proper spraying technique, which includes spraying beyond the edge of a piece, should help to eliminate this problem.

8. Wet spots—The presence of grease or oil spots on the wood or the lacquer may result in the formation of small areas which do not solidify properly. Proper screening of the air system and surface preparation will eliminate this problem.

The next article in this series will be on finishing methods.

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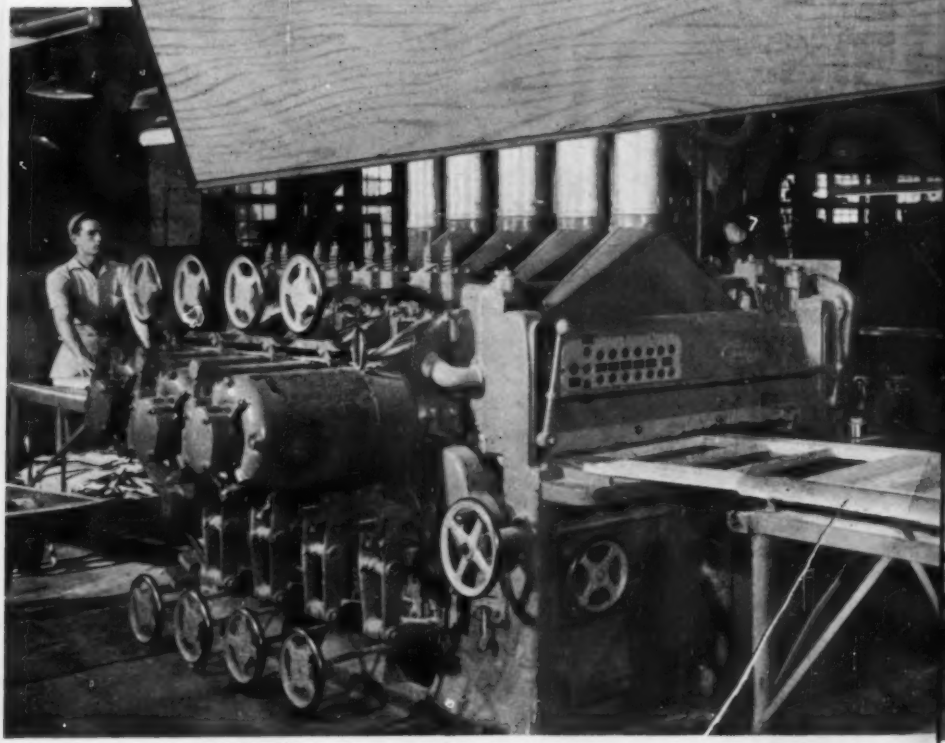

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COLOR COORDINATED FURNITURE FINISHES

By Paul Graham

INVESTIGATION of an attractive mahogany breakfront that was displayed at a recent furniture market in a lustrous, honey-hued mid-tone finish by the Drexel Furniture Company, of Drexel, N.C., uncovered a background story of what is probably one of the most revolutionary developments in furniture finishes during the past ten years.

These new Casualite finishes (Drexel's "Casualtone") were developed in an unusual manner by the Wolverine Finishes Corp., of Grand Rapids, Mich. According to William J. Branstrom, Jr., vice-president in charge of sales, this concern initiated its unique color coordinated program of furniture finishes about three years ago. This program involved extensive color coordination research based upon color trends applied not just to furniture, but to the entire decorative scheme of the home, including fabrics, draperies, wall and floor coverings.

At the start of this program authorities on home furnishings and interior decoration were consulted on current and anticipated color trends. These contacts included merchandise managers of large department stores, owners of small furniture stores, interior decorators, manufacturers of fabrics, draperies and floor coverings, editors of leading home furnishing publications, and other persons who were in any manner interested or active in the field of color coordination in the American home.

The development of these casual, light furniture finishes began with 25 original color panels selected from the trend established by these consultations, indicating possible color selections. These panels were subjected to numerous tests for blending with a wide range of fabrics, draperies and floor coverings. From these tests colors were selected by the basic principles of color coordination which seemed best suited to permit an assembly of harmonious yet unrelated furniture pieces in the home.

Five basic color tones were finally selected for use as a guide to the development of light casual furniture finishes in neutral or mid-tones. Considerable effort was concentrated in the development of in-between shades in all woods—some in wood's natural color and others with interesting color effects. These finishes were designed to impart a close-to-the-grain appearance to keep the natural grain and figure contrastingly alive and to further enhance the distinctive grain characteristic of fine cabinet woods.

These new finishes were first tried

Courtesy Drexel Furniture Co., Drexel, N.C.

Casual Silvertone finish on this cherry buffet keeps natural grain and figure alive with a close-to-the-grain appearance.

out in various furniture plants on a custom basis and are still being developed for the individual furniture manufacturer as custom finishes. It was intended at the beginning of the program to limit these finishes to just 18 different formulations but to date the color coordinated finish program includes more than 200 different formulations.

The new color coordinated furniture finishes were first presented publicly at the 1954 Woodworkers' Industry Show held in Grand Rapids in conjunction with the annual meeting of the Forest Products Research Society. They were shown in a display of attractive furniture groupings against a background of large cabinet wood panels finished in casual tones of basic colors. The furniture pieces also blended well with a wide assortment of drapery and upholstery fabrics to show pleasing effects possible through the technique of color coordination.

Furniture manufacturers currently using Casualite finishes state that part of their preference for the new light finishes is based on the fact that bleaching is not necessary to achieve currently popular light finish colors. They also say that there is no "painted effect," common to many simulated bleach finishes. Some favored the finishes because they can be applied without change of plant or equipment or purchase of additional equipment. Most were enthusiastic over the manner in which the new finish applications were color-engineered for their own individual requirements.

Commenting on this service, Mr. Branstrom stated that his concern assigns experienced wood finishing technicians to work with designers from the creation of the new furniture de-

Drexel bedroom grouping in mid-tone Casualtone finish.

Courtesy Drexel Furniture Co., Drexel, N.C.

sign. He said that many of the new finishes are actually developed in the furniture manufacturer's plant. This on-the-job development of furniture finishes makes it possible to achieve the precise finish effect desired for each separate furniture piece or group.

The new color coordinated furniture finishes technique has made it possible for manufacturers to offer traditional lines in modern casual finishes which blend attractively with the colors of modern home interiors and fit in well with the new era of color currently being introduced for the American way of life. These finishes are said to be easy to adapt to current color trends and to be suitable for application to different woods and styles of furniture.

Courtesy Drexel Furniture Co., Drexel, N.C.

Attractive mahogany breakfront finished in Drexel honey-hued Casualtone color coordinated finish.

The over-all effect of these color coordinated furniture finishes was compared by an interior decorator to a bouquet of freshly-cut flowers of variegated color and form arranged in an attractive presentation of balanced colors. Removing a single piece of furniture from a grouping has the same effect as taking a single blossom from the bouquet for display in a bud vase. There is no sacrifice of beauty in the grouping since the single piece serves as an integral part of the mass harmony of color.

Wolverine's color coordination program is still very active and currently involves research and continuous survey of current and future color trends which is expected to result in new and equally desirable finishes in the future.

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EIGHT FINISHING PROBLEMS AND WAYS TO SOLVE THEM

1 CONTAMINATION

Whenever difficulties occur in the finishing room, first check the spray equipment and guns for cleanliness. It is very easy for water or oil to get into the lines, which materially affects the appearance and drying time of subsequent coats. This should always be the first place to check when irregularities occur in finishing.

2 HAND MARKS

One producer, manufacturing walnut office desks, encountered hand marks on the top. These did not show up until a coat of lacquer was applied. It looked as if the workers had oil on their hands, and while filling the desks, placed their hands on the top while wiping the sides. The desks were then filled without placing the hands on the top, but marks still appeared. The source of this trouble was located in the cabinet sanding department. The sanders sanded the tops first, and while sanding the bases, placed their oily hands on top. When this practice was eliminated, hand marks no longer appeared.

3 BLUSHING

Blushing is a very common difficulty, but is generally encountered during hot, humid weather. This can be eliminated by adding 3 to 5% retarder thinner to the lacquer.

4 NON-DRYING

Non-drying of lacquer sealers or top-coats can, quite often, be caused by using a non-drying oil in a stain or filler. It is not always the fault of the top-coat or sealer when they don't dry.

5 EXCESSIVE DRYNESS

One of our servicemen was shown some radio cabinets which looked very "hungry"—as if they had only one coat of lacquer on them, even though they were filled and had one coat of sealer and two coats of lacquer. Checking into this, they finished some 12" x 12" walnut panels with the same materials. These were perfect. They then took the moisture content on this plywood and found that it contained less than one-half per cent moisture. It was so dry that it virtually absorbed all of the finishing materials. These plywood panels were heated to 350°-375° F. in order to bond the veneer and this dried out the panels. They were then water-sponged, normally air-dried, sanded and finished, and this eliminated this "hungry" appearance. The moisture content of the wood should be around 7% for best results.

6 BLISTERS

Another difficulty encountered was that blisters appeared on solid mahogany tops where the lacquer was applied very heavily. The trouble was that the lacquer set and the air could not work out of the deep pores. 5% Amyl Acetate was added to keep the lacquer open and eliminated this trouble on mahogany. This same trouble was not experienced on the mahogany plywood as the pores were only as deep as the veneer and did not cause this trouble.

7 ORANGE PEEL

In another case, it was found that heavy, gloss lacquer was spraying very rough and full of heavy orange peel. This trouble was located in the spraying equipment, as the regulator was broken on the tank and also on the gun. The pressure would build up, and when the gun opened it would come out very fast, and after spraying, the air would go down and not have enough pressure to atomize the heavy lacquer. New transformers and a circulating pump to replace the pressure tank eliminated this difficulty.

8 TRAPPED SOLVENT

One finisher noticed small blisters appearing in the first coat of sealer over filler. In many cases, this condition can be eliminated by fog-coating the article and then applying a full-flowing coat immediately afterwards. This method seems to allow any trapped solvents in the filler to escape before a full-flowing coat is applied.

—Courtesy The Sherwin-Williams Co.

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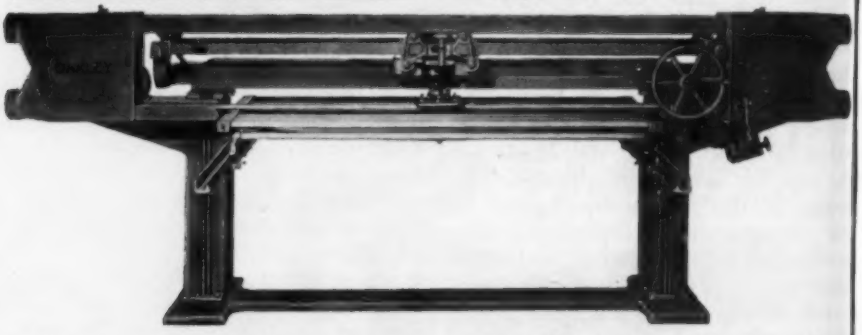

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New Lumber Drying System

The Jamestown Lounge Co., Inc., Jamestown, N.Y., is a large manufacturer of quality furniture at the lowest possible prices, according to E. E. Haines, factory superintendent.

In order to maintain these objectives, the firm is constantly on the alert for new equipment which will speed up and improve production. The company, with 140 employees, converts approximately 110,000 board feet monthly of hardwoods into bedroom, dining room and living room furniture.

One of the problems which confronted the factory was the bottle-neck resulting from the inability of the kilns to keep up with the factory demands for kiln dried maple, elm, beech, birch, cherry, oak and mahogany in thicknesses varying from 4/4 to 9/4. A new lumber drying machine, known as the Dryalator, has helped solve production problems. According to Mr. Haines, the Dryalator, "does in 48 hours what it formerly took the firm three weeks to accomplish."

The front view of the Lumber Dryalator.

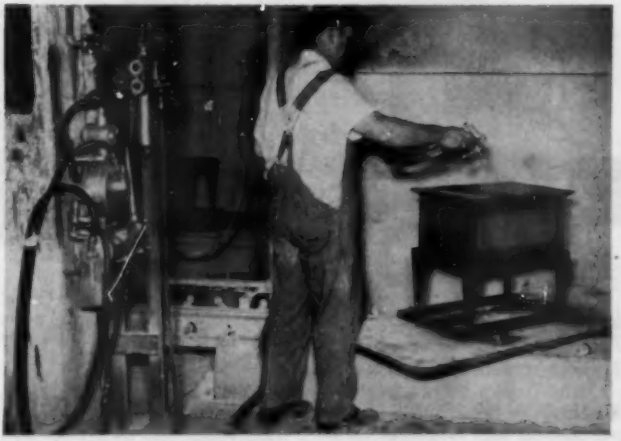
A typical kiln built by the customer from plans furnished by the Lumber Dryalators, Inc. The lumber compartment is 18' x 18' x 12' high.

The Dryalator is a fully packaged unit, which when piped up to steam and electric power, automatically dries any species, and any thickness, in a comparatively short time, in a small amount of space and for a minimum investment. The lumber compartment accommodates 8,000 to 12,000 board feet at a time depending upon length and thickness of the stock. The stock is stacked on cars, in conventional manner, and placed in the kiln.

The Dryalator, with its high blast steam heating coils, is turned on, and delivers up to 1,500,000 btu's an hour. Steam pressure is built up to 140 lb., and temperature in the kiln is raised to 230°F. The Dryalator, working automatically, produces a wind velocity of hurricane force and speed to circulate humidified air through the lumber—removing not only moisture, but extractives from the lumber itself—reducing the tendency of the lumber to check, warp or otherwise degrade.

The Dryalator is equipped with a new device which accurately checks the moisture content of the lumber inside of the kiln, without the operator entering the kiln.

ONE-COAT HOT SPRAY REPLACES TWO-COAT JOB



300 APE unit illustrated above.

Product manufacturers can effect an important time and material savings with a hot spray heater. Designed for use with conventional lacquers, sealers, and varnishes, the Spee-Flo heater heats the material to a level where temperature and viscosity are uniform. Heat is substituted for thinner, and rapid solvent evaporation at the gun produces a high-solids film deposit. Coverage and hold-out are improved, and shrinkage is reduced. Film build may be doubled with standard materials.

Spee-Flo Company publishes a booklet, "Why Hot Spray?", available without charge. Write Spee-Flo Company, Dept. D-2, 720 Polk, Houston, Texas.

"SAN-KLEEN" DRESSING STICK

Rapid mortality of sanding belts and discs is now a thing of the past. Their service can be greatly extended by using the new "San-Kleen" dressing stick frequently during the sanding operation. Paint, varnish and fine wood chips are pulled out of the grit by simply holding this stick against the belt or disc while it is being revolved.

The Banes Marine Co., 154 Randolph Place, West Orange, N.J., manufacturers of "San-Kleen" suggest frequent application during sanding to prevent the belts or discs becoming fully loaded with paint or varnish. Experience has shown that useless belts can be quickly reclaimed and their life extended by 400 to 500%, with a comparable cost reduction.

There's something to laugh at every day—if you shave regularly.

INDUSTRY NOTES

WISCONSIN KNIFE ACQUIRES JOHN KUEHNLE & SONS

Robert H. Solem, general manager of Wisconsin Knife Works announces that the John Kuehnle & Sons of Cincinnati has been purchased. The Kuehnle Company was established in 1868 as a machine shop to rebuild sewing machines, but soon thereafter went into the manufacture and repair of saws, woodworking equipment, and particularly the production of woodworking cutters, knives, boring tools, etc.

The John Kuehnle & Sons Company manufactured a complete line of router bits, dado and tenon heads, round and square moulder cutterheads, chucker heads, solid-wing-type cutters, carbide tipped heads, ground and milled pattern type cutters, etc. Some of these items will be incorporated into the Wisconsin Knife Works' "Badger" line of woodworking machine supplies.

The purchase of the Kuehnle Company included all machinery, jigs, fixtures, drawings, photographs, and customer records. These assets have been moved to Beloit, as the Kuehnle Company will discontinue operations in Cincinnati.

INSTITUTE EMBLEM

The official emblem of the newly-formed National Institute of Wood Kitchen Cabinets has been copyrighted in use and is made available to members under a licensing arrangement for use in advertising and for application to cabinets.

"The slogan on the emblem—'Wood for Enduring Beauty'—reflects two of the basic qualities, beauty and durability, which have made wood kitchen cabinets the overwhelming choice of builders, architects and consumers."

The emblem is in the free form of an artist's palette and it contains a portrait of a young woman, symbolizing beauty and the kitchen as the woman's domain.

NATIONAL STARCH ANNOUNCES NEW PRODUCTION FACILITIES

National Starch Products Inc. announces the opening of a new plant providing additional facilities for the production of rubber and other solvent adhesives at Plainsfield, New Jersey.

This new installation, erected on a recently acquired four and a half acre tract of land adjacent to the Plainfield factory, will permit expanded production of specially formulated adhesives for use in the laminating and rigid bonding fields.

GRAYCON TOOLS, INC.

Graycon Tools, Inc. has recently been organized with headquarters in Wabash, Indiana, by Rust F. Gray and Edward

DUSTKOP
STOPS DUST

DUST
COLLECTOR

SAVES INSTALLATION TIME

Stop dust quickly, at lower cost, with Dustkop. Thirty-seven standard models *ready to use* and available from stock. Dustkop conserves floor space, reduces maintenance. Collects almost all types of industrial dusts. Write for descriptive literature.

Also a complete line of Mist Collectors

AGET MANUFACTURING COMPANY
1382 East Church St. • Adrian, Michigan

A. O'Connor for the purpose of designing and manufacturing cutterheads and knives for the woodworking industry.

Gray, who has had over 25 years experience in the manufacture and sale of cutter equipment both with the Wisconsin Knife Works and the G. M. Diehl Machine Works, is a recognized authority on cutting problems and well known for articles written on the subject.

O'Connor, a graduate of Stout School of Industrial Arts, has devoted the past 15 years to the production and selling of cutterheads and knives and is equally known and respected for his knowledge and ingenuity in this branch of the industry.

The company has acquired the exclusive rights to a special heat treating process that is said to produce a knife of unusual durability and they claim very gratifying results from its use. They are featuring this process in

DISTRICT MANAGERS

WOOD WORKING DIGEST

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CUTTING PERFORMANCE

2 to 3 TIMES GREATER

The Special alloy high speed steel in Onsrud bits makes possible a finer, more serviceable cutter for smoothest work. The bits are carefully ground to correct clearance, tempered in modern controlled atmosphere electric furnaces, to insure uniformity and accuracy. These bits can usually be relied upon to give from 2 to 3 times the cutting performance of most ordinary routing bits because of their high tensile and transversal strength.

Write for illustrated **BULLETIN** *and* **PRICES.**

Onsrud Cutter Manufacturing Co.

801-21 E. Broadway,

Libertyville, Ill.

addition to their complete line of cutterheads, milled to pattern bits, knives and shaper steel.

THOR PURCHASE

The Thor Power Tool Company, Aurora, Illinois, manufacturers of portable air and electric power tools, announces the acquisition of the assets of the Cincinnati Rubber Manufacturing Company, Cincinnati, Ohio. This company manufactures transmission and conveyor belting, hose, rubber roll covers, packings, gaskets, tubing and associated mechanical rubber products.

Neil C. Hurley, Jr., Thor president, said that under the purchase agreement Thor will pay over $1,600,000 for all of the Cincinnati assets, including inventory, machinery, buildings name and good will.

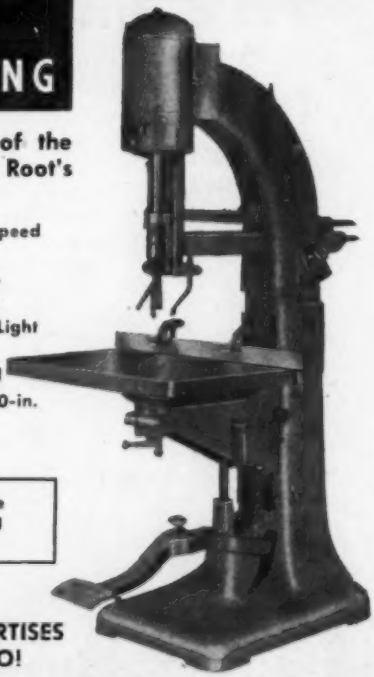
"While the manufacturing processes of Cincinnati and Thor are totally dis-

ROOT STYLE G-250

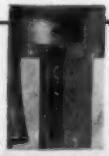
FOOT FEED BORER WITH EVERYTHING

Just check some of the PLUS values of Root's G-250.

- 3 horsepower, 2-speed motor
- Unique "Spindle-in-Head" Construction
- Balanced Feed for Light and Heavy Boring
- Reinforced—Rugged
- Bores to center of 40-in. Wide Stock
- All Adjustments



Read More—See More in Free Bulletin No. 151



MORTISES ALSO!

B. M. ROOT CO. | **YORK, PA.**

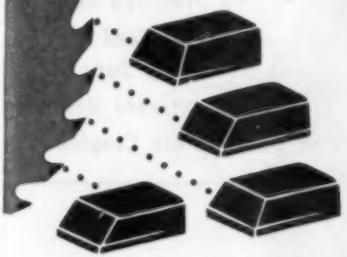
similar," said president Neil Hurley, "the sales objectives are almost identical. We sell power tools to the same people who buy belting, for example, in mines, quarries and industrial plants. Naturally, air hose, too, goes to those who buy pneumatic tools."

Cincinnati Rubber Manufacturing Company has been producing mechanical rubber goods since 1905. No changes in management or operations are contemplated, except that J. F. Joseph, president of the Cincinnati company since 1934, will become chairman of the board, and L. P. Darnall, vice-president and general manager since 1946, will move to the presidency. Both are remaining active in the business.

NLMA OFFICERS

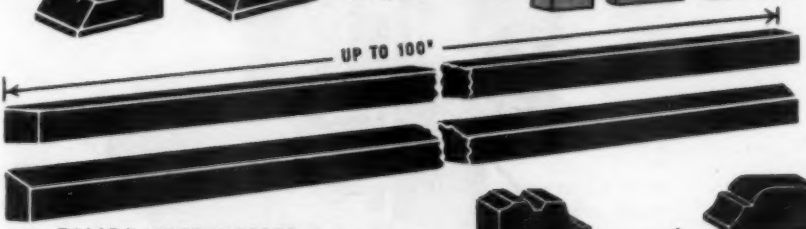
Lawrence D. Kellogg, president of the L. D. Kellogg Lumber Company, Alexandria, La., was elected president

TALIDE CIRCULAR SAW TIPS–Precision molded with clean, sharp edges—and with a special bright surface finish that facilitates brazing.



TALIDE TIPS
stay sharper · cut longer · lower costs

Available in 5 standard grades and in many sizes and shapes, for high production service on every type of woodworking operation, including the cutting of insulation board, hard board, fibres, plastics, laminated wood, etc.



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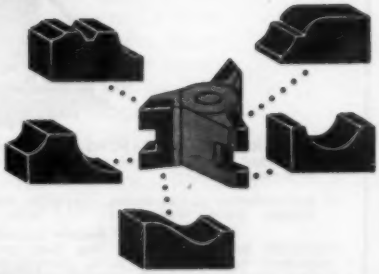

Metal Carbides Corporation, 6001 Southern Blvd., Youngstown 12, Ohio

Send for Catalog 56-G

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YOUNGSTOWN 12, OHIO
HOT PRESSED AND SINTERED CARBIDES · VACUUM METALS
HEAVY METAL · CERMETS · HIGH TEMPERATURE ALLOYS
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

TALIDE ROTARY CUTTER BLANKS
Preformed to accurate tolerance with minimum stock—and to any form or shape desired.

of the National Lumber Manufacturers Association at the 1955 annual meeting of the organization's directors.

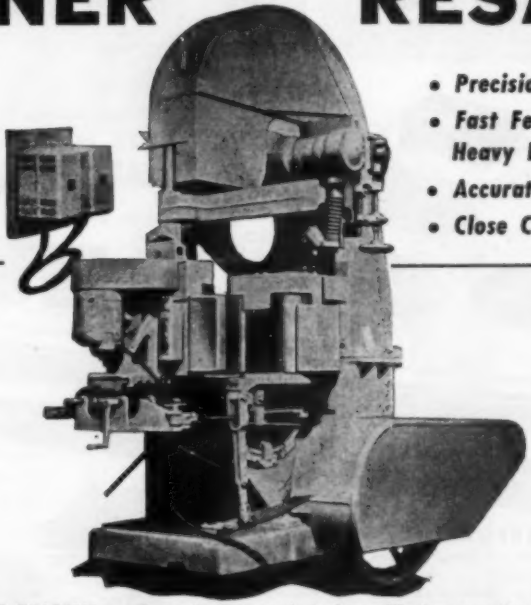
Kellogg succeeds Judd Greenman, retired general manager of the Vernonia division of the Long-Bell Lumber Company, Vernonia, Ore., who was named NLMA board chairman.

Walter M. Leuthold, president of the Deer Park Pine Industries, Deer Park, Wash., succeeds Kellogg as first vice-president of NLMA.

Elected regional vice presidents of the lumber organization were: A. L. Helmer, president of the Western Pine Association; N. B. Giustina, president of the West Coast Lumbermen's Association; Arthur Temple, Jr., president of the Southern Pine Association, and Henry W. Jones, vice president of Southern Hardwood Producers, Inc.

TURNER MODEL "E" RESAW

MASSIVE ALL CAST CONSTRUCTION



- *Precision Built*
- *Fast Feed Heavy Duty*
- *Accurate Resawing*
- *Close Coupled*

HERE ARE 6 REASONS — Our salesmen and dealers will give you the rest:

1. 100% ball and roller bearing throughout.
2. Self-centering or slab sawing. Simple, quick change-over.
3. Tilts to 45 degrees.
4. No moving or wearing parts below bed line.
5. All controls convenient to the operator.
6. Rate of feed from 10 to 300 feet per min., infinite range. Faster if desired.

The Model "E" Resaw is available in 5 sizes: 42, 48, 52, 62 and 72".

TURNER Band Resaws and Rip Saws are manufactured in Twenty-Seven different models, design engineered for use in saw mills, planing mills, box shook and crate manufacturing plants, furniture plants, retail lumber yards, and all other wood remanufacturing activities.

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TURNER MACHINERY COMPANY

100 BRANNAN STREET, SAN FRANCISCO 7, CALIFORNIA - TELEPHONE GARFIELD 1-2300

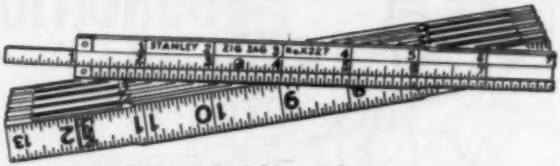
Division of United Engineering Company

MERGER ANNOUNCED

American Cyanamid Company and The Formica Company announced recently that negotiations are in progress whereby Cyanamid, one of the nation's leading chemical companies, will acquire the business and assets of The Formica Company, producer of laminated plastics.

The proposed acquisition, detailed terms of which are still under negotiation, contemplates that Formica stockholders will receive one and three-quarters shares of Cyanamid stock for each share of Formica stock outstanding. When the acquisition takes place, it is contemplated that Formica will continue to operate under the direction of the present Formica management as an additional unit in the Cyanamid organization. Final agreement will be subject to the approval of the Board of Directors of Cyanamid and the stockholders and directors of Formica.

These 'Zig-Zag' Rules come straight to the point



No. X227 6 ft. folding rule
with extension slide

No. 106
6 ft. folding rule

And the point is accuracy. Stanley rules make accurate measuring easier . . . markings are bold, black, easy to read — joints are smooth acting and strong — selected hardwood sticks are protected by long wearing plastic finish. **The rule lasts longer!**

The X227 features a useful 7" brass slide extension for inside measurements. See these and other Stanley Rules at your favorite hardware store. Write Stanley Tools, 791 Elm St., New Britain, Conn., for tool catalog.

THE TOOL BOX OF THE WORLD

STANLEY

"The merging of the two organizations will provide Cyanamid with national distribution channels to the consuming public," a company spokesman said, "and at the same time can be expected to contribute significantly to the expansion of the Formica product line."

THREE COMPANIES MERGE

In order to expand their line of products, the instantaneous Glue Converter Company, the Jaeckh Manufacturing Company and the John Stanton Company have merged as the Long-Stanton Company, 910 Baymiller St., Cincinnati.

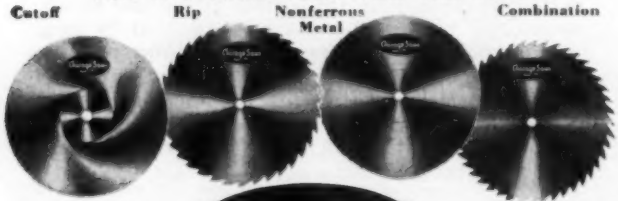
Serving as president of the new company is Robert Masters, former owner of the Jaeckh Company. Vice-president is Chris L. Long, owner of the Long Manufacturing Company and the Instantaneous Glue Converter Company, and veteran of 30 years' experience in

A GUARANTEE WITH JUST 1 CONDITION

The condition is the one that you impose yourself — that the saw be properly used. Chicago saws are not only guaranteed against defects in workmanship and materials, but guaranteed to *perform* satisfactorily.

Any Chicago blade failing to meet proper standards of operation will be repaired or replaced at our expense. Order today from Chicago Saws, Inc.

USE THE RIGHT SAW FOR THE JOB



ORDER DIRECT — Chicago Saws INC. — FROM FACTORY

6132 OAK PARK AVENUE — CHICAGO 38, ILLINOIS

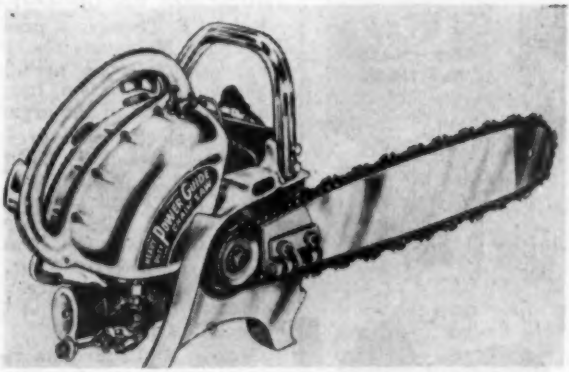
the tool and die field. Former manager of the John Stanton Company, Park Gast, is secretary-treasurer of Long-Stanton.

The Long-Stanton Company offers a line of metal specialties including stampings, washers, tools, dies and special drill grinding attachments. In addition to jobbing work, the company manufactures a complete line of "Jake" compressed air sprayers, the Zimmerman process filtering glue converter, and the Ideal glue heaters and mixers.

M AND M ADDS PLANT

M and M Wood Working Company officially opened its new Lyons Plywood Division, Lyons, Oregon recently with an open house for its neighbors in the Santiam Valley. While the plant was in operation approximately 3,000 interested people were guided through to see how plywood is made. Tours and initial exhibition of Douglas Fir Plywood Association's "Plywood Circus" were held from 1:30 p.m. to 9 p.m.

POWER GUIDE CHAIN SAW



This 3 h.p., 18" chain and guide machine is useful for many jobs. The power guide chain saw weighs less than 30 lbs. A heavy duty chain saw with ease of balance, it cuts logs 18" in diameter. A solid aluminum chain guard prevents sawdust from entering the carburetor. The exclusive dual accelerator control makes for easy handling and cutting.

Write H & S Associates, 928 W. Irving Park Road, Chicago 13, Ill., for additional information.

CLIP-ON RUBBER TRANSFER CHAIN COVER PROTECTS LUMBER

Standard transfer chain can quickly and inexpensively be given a "rubber cover" to eliminate lumber damage, by means of rubber cover clips.

Non-marking abrasion-resistant rubber permanently bonded to a patented metal clip does the job. Clip snaps on by hand; two hammer blows swage in the curved lip to anchor the clip positively onto the chain link. Standard clips are available for No. 130 and No. 138 types of chain.

Holz patented clips provide complete protection against lumber marking or bruising, and provide a better "grip" on inclined loads. They permit use of the entire existing chain installation and can be installed with little or no loss of production.

Complete data and prices may be obtained by writing to Holz Tire & Rubber Company, P.O. Box 618, Lodi, California.

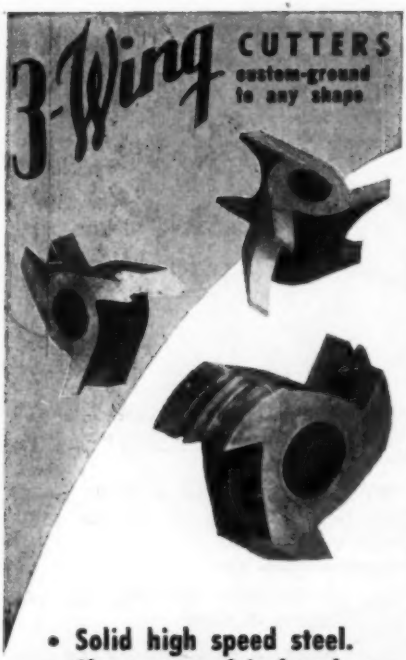
dependable HARDWOOD DIMENSION

- finished, semi-finished or rough
- lumber or parts
- solid or laminated
- corestocks, blocks
- wood-and-plastics
- Gam-en-wood

GAMBLE BROTHERS GB GUARANTEED BOND INCORPORATED

Engineered Wood Parts in Southern and Appalachian Hardwoods, Walnut, or Mahogany.

OFFICES AND PLANT: Louisville 9, Kentucky



- **Solid high speed steel.**
- **Shape ground in bevel or form relieved.**
- **All cutting surfaces and sides finished ground.**
- **Bore sizes from ½" dia. up.**
- **Prompt delivery.**
- **Carbide tipped cutters quoted upon request.**

Prompt sharpening service available. Price list on 3 Wing Cutters furnished upon request.

Dealer inquiries invited.

Send for complete price list on other knives for the woodworking industry.

CHARLES G. G. SCHMIDT & CO., INC.
403-405 BROOME ST., NEW YORK 13, N.Y.

THOMPSON REELECTED

Robert P. Thompson, president of the Thompson Mahogany Co., Philadelphia, Pa., was reelected president of the Mahogany Association, Inc. at the 1955 annual meeting of the organization.

Also reelected vice-president for a second term was I. T. Williams, partner of Ichabod T. Williams & Sons, New York City. Frank A. Fricker, vice-president and sales manager of Weis-Fricker Mahogany Co., Pensacola, Florida, was elected treasurer, succeeding Kent F. Peterson, vice-president of Louisiana Cypress Co., of Chicago and Pounchatoula, La.

George N. Lamb was reelected executive secretary for the 21st consecutive year. All directors and alternates were also re-elected.

The new trade promotion committee appointed consists of: I. T. Williams, chairman; B. O. Gerrish, president, Palmer & Parker Co., Boston; George T. Kinley, president, William L. Marshall Ltd., New York City.

SOUTHWEST FURNITURE MAKERS ORGANIZE

The Southwestern Furniture Manufacturers Association has been organized. George McNeff, of Falcon Manufacturing Company, Dallas, is president of the new organization. H. D. Spalti, of Olive-Myers-Spalti, Athens, is first vice-president. Regional vice-presidents are: Oklahoma, Jack Longmire, Oklahoma Furniture Manufacturing Company, Guthrie, Oklahoma; and Arkansas, John Harper, Fort Smith Lines, Fort Smith, Arkansas. Milton Smith, Economy Furniture Company, Austin, is elected treasurer.

McNeff said the Association was formed to help Southwestern manufacturers and marketers keep pace with the rapid growth of the furniture industry in this area. Southwestern manufacturers will also benefit from an exchange of views on manufacturing and design problems, he said.

Association activities will include Texas, Oklahoma, New Mexico, Arkansas, Louisiana and Mississippi.

Appointments

The Ohio Knife Co., Cincinnati, Ohio, has announced the appointment of **H. J. Marty** as district manager of the New York office.

Ekstrom, Carlson & Co., recently announced three changes in staff. **Fred J. Heid**, formerly general sales manager, has been appointed exclusive representative to the aircraft industry in the eastern half of the U.S. **Ray C. Reinhartsen**, formerly vice-president of Onsrud Machine Works, is the new general sales manager for Ekstrom. **G. R. "Dick" Gordon**, formerly assistant chief tool engineer in charge of research at Convair, is now exclusive representative to the aircraft industry in the western half of the U.S.

Carl A. Rishell has been elected a vice-president of the Timber Engineering Co. He has served the wood industries for the last 20 years. **Harry G. Uhl** has been re-elected president of the company. New director of research, the position held by Rishell, is **Nicholas V. Poletika.**

Berkley V. Schaub, vice-president and director of National Adhesives, Ltd., has been elected president of the Canadian Packaging Association.

New Southwest division sales manager for Forest Fiber Products Co. is **Henry B. Jacobsen.** He will manage sales in California, Nevada and Arizona. **Hugh M. Lineweaver** moves from the position of sales promotion director for this same organization to the post of merchandising manager.

John Hassall, Inc., Westbury, L. I., N.Y., manufacturers of special fasteners, announce the appointment of **John D. Brewer** as advertising and sales promotion manager.

I can see how it might be possible for a man to look down upon the earth and be an atheist. But I cannot conceive how a man could look up into heaven and say there is no God.

DIXIE takes the *DUST* out of INDUSTRY

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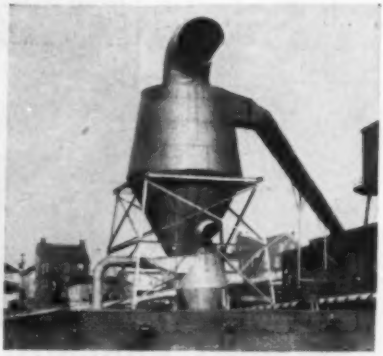

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VENEER, PLYWOOD and LAMINATED WOOD

FEATURES

Plywood Interior Paneling
By Thomas D. Perry

* * *

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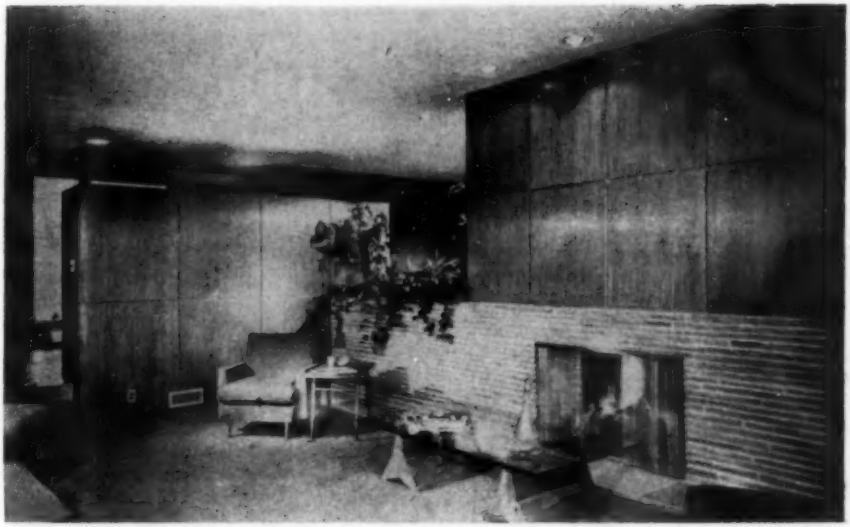

PLYWOOD INTERIOR PANELING

By Thomas D. Perry

DURING the last decade interior paneling made of plywood has grown rapidly in popularity. There are several reasons for this: (1) plywood has been vigorously promoted and is widely available in warehouses all over the United States and Canada; (2) The Douglas fir plywood industry has developed many attractive grain, shadow and texture effects; (3) hardwood plywood finishing methods have been improved and prefinishing plywood panels are available; (4) methods of mounting, matching and edge jointing have been extensively publicized, so that installation is less difficult than formerly; (5) special moldings and clips have been devised, as well as contact glues, which practically eliminate face nailing; and (6), but not least, the cost of normal lath and plaster has skyrocketed. The process of building a "dri-built" house (without plaster) is now a well established procedure and is widely used in modest and medium priced homes.

Preparations for Interior Paneling

Probably the most important factor in successfully installing interior paneling is a true flat base with adequate nailing strips at every plywood joint. Studding is normally set on 16″ centers, which will accommodate standard plywood widths of 48″, or the narrower 16″ strips that are available in many types of interior plywood. In a new house, if the studding is straight and can be set true, both in line and for spacing, it is often practical to attach the plywood directly on the studs. In

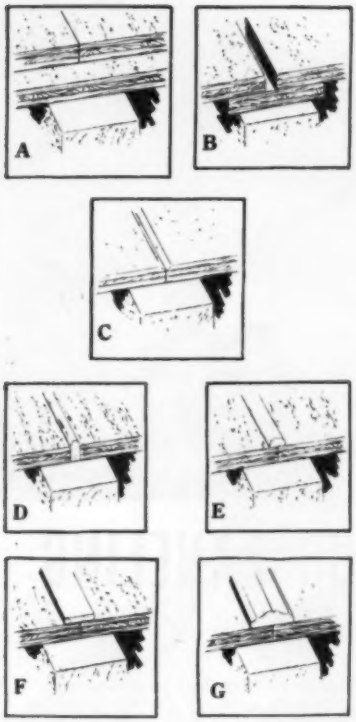

Fig. 1. Types of edge joints for interior paneling.

older houses, or where the studding may provide an uneven base, it is necessary to nail furring strips, some 16″ apart, with one carefully located for the baseboard and another placed carefully to accommodate the molding or cove at the ceiling line. This procedure contemplates the vertical use of plywood. If a horizontal motif is desired, the method of furring would need to be altered accordingly to provide for horizontal edge joints. If large squares or rectangles are desired there may be need of further modification in the furring. When furring is laid over old plaster, the furring strips need be no more than ¼″ to ⅜″ thick, but with open studding the rule is 1″ to 2″ (nominal) strips, which are actually about ¾″ x 1¾″. The important end result is to have a support accurately placed under each joint, with intermediate supporting members, not over 16″ apart, all to be firmly nailed in a true plane. This can be done by stretching taut lines to which all furring strips should be set by means of shims.

Standard sheets of plywood are 8′ long, and will permit a clear floor-to-ceiling height of 8′ 6″, since several inches can be gained at the baseboard, allowing an inch or two for the ceiling mold or cove. If higher rooms are desired it is customary to provide a chair rail, 24″ to 30″ above the floor, with plywood wainscoating below and the wall paneling extending from the chair rail up. This will provide for rooms up to about 11′ high. In some cases a drop ceiling, some 16″ to 20″ down, is preferred to wainscoating, with the wall paneling extending to the base board or floor line. There is wide scope for design features, depending on the location of built-in features, such as bookcases, fireplaces, windows, doors, alcoves, archways and the like. It is often desirable to balance or center the panel design on one or more of these features, rather than to attempt to run the plywood continuously from one corner of the room to the other.

Edge Jointing Interior Paneling

A number of methods are available for making joints between adjacent plywood panels, according to the effect desired. Several of the simpler types of joints are shown in Fig. 1, varying from the snug flush joint to the joint covered with moldings. Careful work-

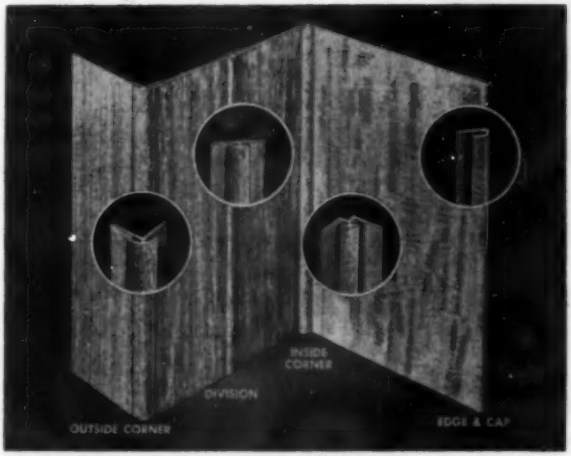

Fig. 2. Extruded metal moldings for edge joints in interior paneling.

manship is necessary, although no great skill is required.

The joint in A is a tight flush joint, requiring either unusually even studs or furring strips to make a smooth joint. A continuous under strip of plywood is desirable, which need be no wider than the stud or furring strip. The plywood can be nailed and glued to the backing with conventional glues. There is also available a contact glue to be applied to the furring strips and to the plywood area to rest against these strips, which eliminates the use of nails. In this instance the plywood must be carefully pressed in place in exact position and pressed down by a wooden roller, or wood block and mallet, so as to be certain that contact is made at all points. The use of this contact glue eliminates the need of using a few finishing nails on intermediate supports between the edge joints. In some types of finishing it is almost impossible to entirely conceal such intermediate nailing, even when carefully countersunk and puttied.

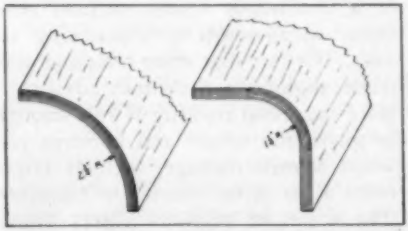

Fig. 3. Plywood cove moldings.

The method indicated in B provides an edge gap of ¼", ½" or more between the panels, and gives a pleasing shadow effect. In such instances the under strip of plywood is essential.

Joint C is a modification of A, with the edges chamfered to make a "V" groove between the panels. The resulting shadow line is less pronounced than in B, but the groove will successfully conceal any slight shrinkage at the joint, which could possibly be detected in joint A.

A half round molding is employed in D, against which the plywood is butted snugly. Joint E has a half round bradded directly over the joint, entirely

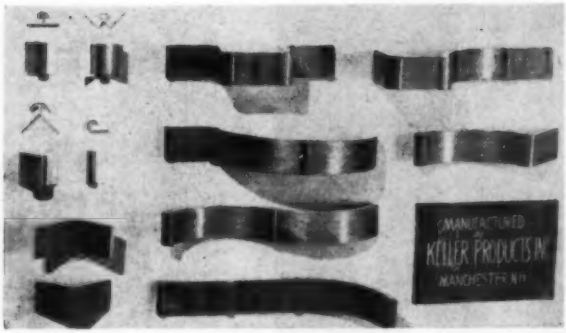

Fig. 4. Typical combinations of plywood curves and metal moldings.

concealing it and covering any nail heads.

Types F and G are over moldings, bradded in place, and giving various types of shadow lines, which completely conceal the nail heads in the edges of the plywood.

Metal Molding for Edge Joints

As the use of interior paneling grew, there developed a demand for improved methods of installation, that would provide more adequately for inside and outside corners, and that would protect the raw edges of plywood that might be exposed. After some experimentation it was found that four contours of metal moldings would meet practically all installation requirements, and these are illustrated in Fig. 2. These skeleton moldings are made of extruded aluminum, and the wings are thin enough so that they are easily nailed to studding or furring. All nail heads are concealed by the completed plywood. These moldings, as shown in the photograph, are adapted to ¼" plywood. They are also available in sizes that will accommodate ¾" plywood. The front, or exposed areas, of these moldings is faced with thin veneer, firmly glued under heat, to the metal using a special metal cement, equal in durability to the glue used in the plywood. The over-all effect is one of a continuous veneer surface, reinforced at all joints with matching veneer. The fact that these moldings protrude slightly is a distinct advantage, since the metal backing is stiff enough to guard the veneer and adjacent plywood against damage, such as might often occur in the moving of furniture. The edges of plywood sheets should have a slight clearance (1/32"±) with-

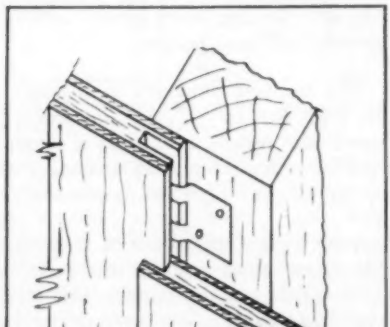

Fig. 5. Detail of metal clips for lapped edge joints.

in the moldings, to accommodate the slight amount of dimensional change that may take place under varying atmospheric conditions during service. If the plywood is laid progressively all nailing is open, except for the last panel, which may require a bit of maneuvering by a resourceful workman. These veneer faced metal moldings, manufactured by Keller Products, Inc., of Manchester, N.H., and merchandised by the United States Plywood Corporation, are available in 8′ lengths and in

Fig. 6. Relief grain fir with flush joints.

five species of wood: walnut, mahogany, oak, korina and maple. They are carried in stock by most plywood warehouses, and are a distinct help in the installation of any interior paneling.

Curved plywood moldings, or coves, are also available as a further help in installing interior paneling, where rounded corners are desired, as at vertical corners, or the ceiling line. Such curves are often more consistent with modern designs than the conventional square corners or the solid ceiling cove moldings. These curved moldings are

Fig. 7. Relief grain fir with joints covered.

available in two sizes, both 5-ply, ¼″, and in standard 8′ lengths. The two different contours are indicated and dimensioned in Fig. 3. The standard species in which these moldings are available are the same as for the metal faced moldings already described. The grain of the veneer may run with or across the curve, and the face veneer may be either on the convex or concave surface. These plywood coves are made and merchandised by the same

Fig. 8. Sunroom with Texture 1-11 wall.

Fig. 9. High density overlaid plywood in the kitchen.

companies indicated above, and are generally available at plywood distributors. The use of these curved all-plywood moldings and veneer faced metal moldings can be combined in many ways, a few of which are suggested in Fig. 4.

There are other rather unusual applications for these curved all-plywood moldings. They have been used successfully for shields for indirect lighting,

Fig. 10. Elm plywood installed with metal moldings.

Fig. 11. Oak interior walls with metal moldings.

either at the ceiling line for general lighting, or in special arrangements, as for illuminating pictures, school blackboards, exhibit frames or display cases. Another instance is their use for door and window casings, where modern designs may require smooth sweeping curves, rather than the conventional casings that stand out from the plywood. In such coved casings the veneer faced metal moldings (See Fig. 2) are

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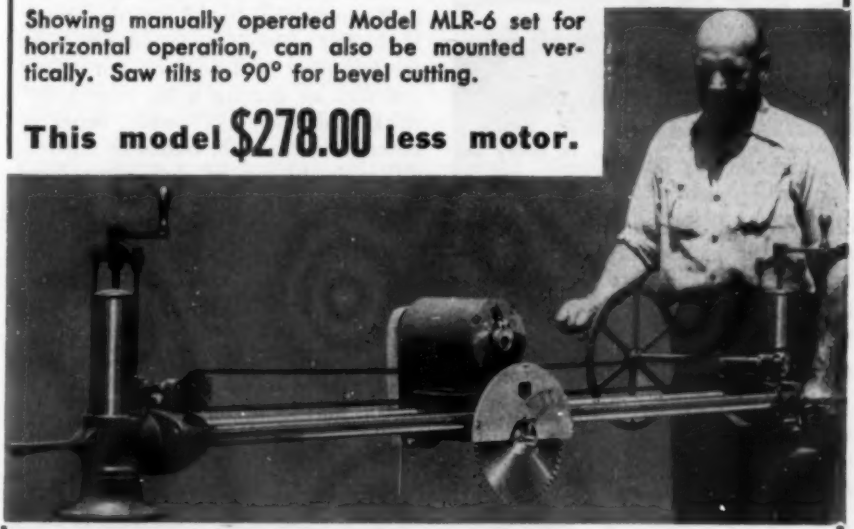

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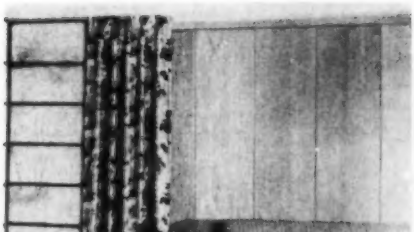

Fig. 12. "Plankweld" interior in rotary oak plywood.

often helpful in connecting and supporting the narrow plywood units required. Few indeed are the installation problems that cannot be solved by these several types of moldings.

Metal Clips for Lapped Edge Joints

A surprisingly simple method of installing interior paneling with overlapped edges has been developed which is particularly adaptable to prefinished plywood, and is consequently of particular interest to "do-it-yourself" devotees.

The enlarged projection of Fig. 5 indicates, toward the top, a thin metal clip with two offset prongs, which extend into the edge groove and hold the left panel firmly against the stud or furring strip, when the clip is nailed in place. These prongs of thin aluminum permit the back lip of the next panel to be slipped into the groove of the left panel. This thoroughly locks the left edge of the second panel, and provides an overlap a bit over 1/16" thick and about ¼" wide. Inner or outer corners may be butted or mitered, although the use of the veneer faced metal moldings, previously described, is often to be preferred. In order to get the full effect of the shadow lines at the over lap, they should be laid "away" from the source of natural light. This type of plywood wall paneling is supplied, 16 ¼" wide and 8' long, properly grooved and sanded on both edges, and attractively prefinished.

Examples of Interior Paneling

This brief outline of installation

Fig. 13. Walnut interior and furniture.

methods will help in the appreciation of the several photographs of interior paneling which follow. They illustrate many of the installation methods described and are representative of both new and remodeled homes.

The dining-living room shown in the photograph of Fig. 6, is paneled with relief grain Douglas fir plywood, using the snugly butted edge joint illustrated in Fig. 1-A. The joint can be located only by the changes in grain direction. This relief grain plywood is made by sandblasting or otherwise removing the softer areas of summerwood growth, leaving the narrower denser areas in relief. Plywood of this type has been given a variety of proprietary names, such as "Sea Swirl", "Drift Wood", "Sand Dune", etc. There are also modifications in this relief technique, i.e., that of close mechanical grooving in parallel or irregular lines, as can be noted in the desk in Fig. 10. The over all effect is a bit unusual and a welcome change from a flat and monotonous smoothness.

The same type of relief grain fir is also shown in Fig. 7, except that the joints are covered with plain molding, as in the detail of Fig. 1-F. The juvenile beds, shelves and case of drawers are of birch plywood.

A rather striking effect is produced by grooved plywood and is illustrated in Fig. 8. Here the "V" grooves are machined into the plywood, with a 4" spacing, and this plywood has been termed "Texture 1-11", in trade circles. With a similar "V" groove at the edge joint, there is no way of distinguishing the separate panels. Since this wall is unusually high, a carefully matched

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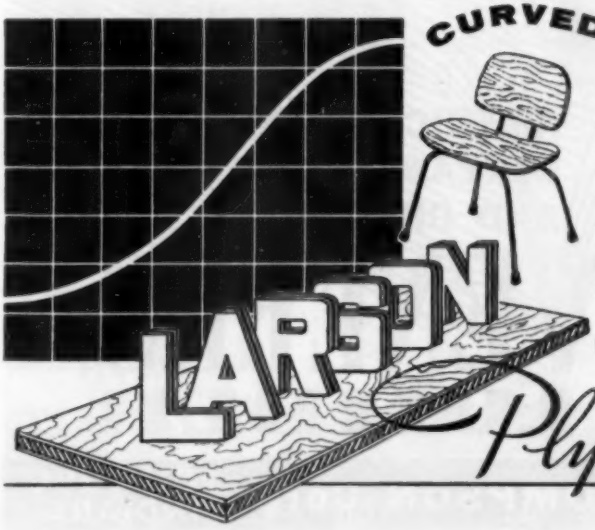

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end joint is just observable below the ceiling line.

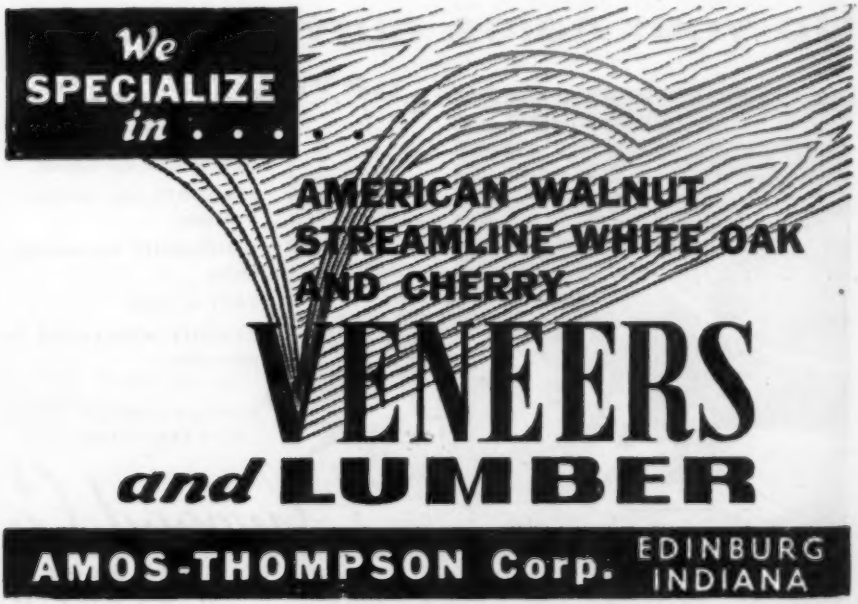
Quite a different wall treatment is offered in the use of a high density overlaid plywood in a kitchen design, as can be noted in Fig. 9. This glossy overlaid plywood is used for both walls and fixtures, and is entirely without paint. The rich amber shades of the wood grain show through the more or less transparent plastic surface.

Turning now from softwood plywood to hardwood plywood, we find quite a number of differences, especially in the field of contrasting colors with less emphasis on hard and soft grain effects. The American elm paneling, shown in Fig. 10, is installed with the veneer faced metal moldings previously described. The panels are full 4′ wide and, at the ceiling line, present some rather complicated angle arrangements. The wainscoating and baseboard appear to be black Micarta, and the desk back and ends are striated fir plywood.

The conference room in Fig. 11 uses rotary oak panels, about 2′ wide and mounted with veneer faced metal moldings, with a minimum of casing around the windows and doors.

The shadow line effect of "Plankweld" can be seen in Fig. 12, utilizing rotary oak plywood. There is a narrow flat mold at the ceiling line, and only a quarter round molding at the floor. Note that the laps are laid "away" from the window, to be fully effective. The exterior corners, not shown in the photo, were made with veneer faced metal moldings, heretofore described.

The modern dining room in Fig. 13,



with indirect lighting and built-in sideboard, is of American black walnut plywood, laid with tight flush joints and without baseboards. The table also is American walnut plywood, with a distinctly modern motif.

Another modern design, in walnut, is laid in large square panels, which are glued to a fir plywood backing, leaving a 2″ gap between panels, as is indicated in the picture on the first page of this article. This accentuates the shadow lines and is a pleasing variant from the customary continuous plywood walls. The thick plate glass table top is an interesting and novel fireplace feature.

Conclusions

This brief outline of methods of installing interior paneling, and the several examples of the resulting installations, both in softwood and hardwood plywood, are little more than glimpses of the many ways in which plywood can be utilized for interiors. No attempt has been made to illustrate the widespread use of plywood in prefabs, or in larger commercial and industrial buildings.

There is no doubt but what plywood is becoming an outstanding material for home interiors. It offers elements of warmth, beauty, color and softness, which no other wall material can supply. Finishing procedures have now been developed to where plywood paneling is far more durable than painted or papered plastered walls. Perhaps the most significant factor is that standard plywood, in the "white" and prefinished, including the essential hardware, is widely available through plywood distributors and warehouses in all important population centers.

The courtesy of the Douglas Fir Plywood Association, the United States Plywood Corporation, and the Keller Products, Inc., in supplying data and photos, is gratefully acknowledged by the writer. Many of the processes, products and trade names are protected by patents and copyrights. Interested parties should investigate carefully before considering their use.

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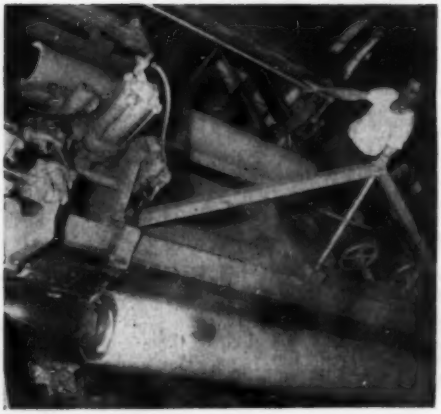
Out of th and in

Tour of the Allen Quimby Veneer Company mill.

Logs are carried from storage areas by giant overhead cranes.

Lathe peels thin veneer from logs on fast spinning spindle.



FAR up in the north birch logs are being changed into plywood panels at the rate of 10,000 panels a day. Travel up through the state of Maine, known as a land of pine trees and wonderful vacations, to Bingham, Maine. Here the Allen Quimby Veneer Company, founded in 1937, is producing great quantities of hardwood plywood. Most of the output goes directly to door manufacturers.

It is the Quimby high standards of product quality that have given the company a driving interest in high grade plywood. Modern production methods and an efficient plant added to this high standard have helped this plywood manufacturer attain a top position in the industry.

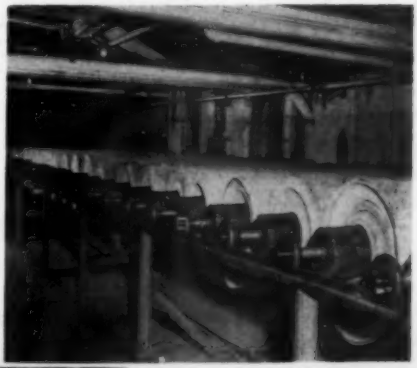
Birch trees, which are either grown on the firm's own acreage in northern Maine or purchased from other growers, and adhesive to bond the plies together are the chief ingredients of its product and the foundations upon which Quimby bases its high quality. The trees are choice and the adhesive is American Cyanamid's Urac 186. This is a gen-

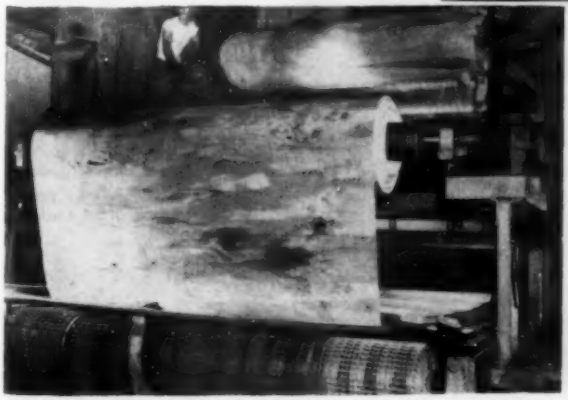
of the Forest
nd into a Door

A land of pine trees and remembered vacations, Maine is also a region of plywood producers.

eral purpose, urea formaldehyde resin in water solution. Its excellent stability and uniformity suit it ideally for tank car delivery and bulk storage. Quimby's two storage tanks each has a capacity of 10,000 gallons, or 100,000 pounds of resin.

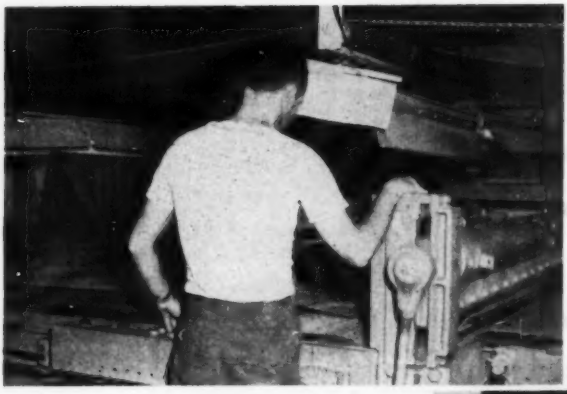
Because of its relatively high solids content, the resin may be extended with cereal flour and added water and still provide strong, high quality glue lines. This helps keep costs down without impairment to the plywood. The





Reels of veneer waiting to be processed through drying machine.

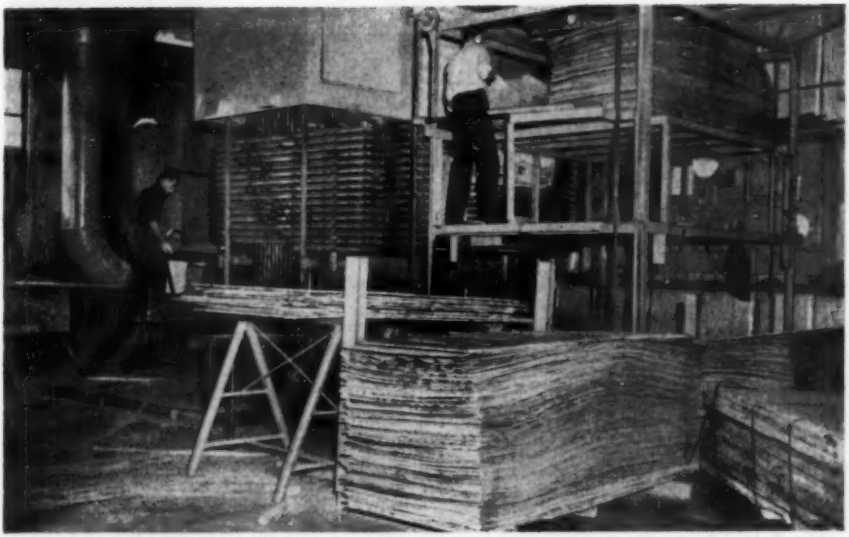
Beginning to unwind reel through drying machine.



Operator grades stock, clipping to width and cutting out imperfections.

Veneer is coated on both sides as it goes through spreader. Coated veneer becomes center ply in this 3-ply veneer being made here.

Cyanamid's liquid urea resin, Urac 186, is stored at the Allen Quimby plant in these two giant tanks.



Hydraulic press applies pressure.

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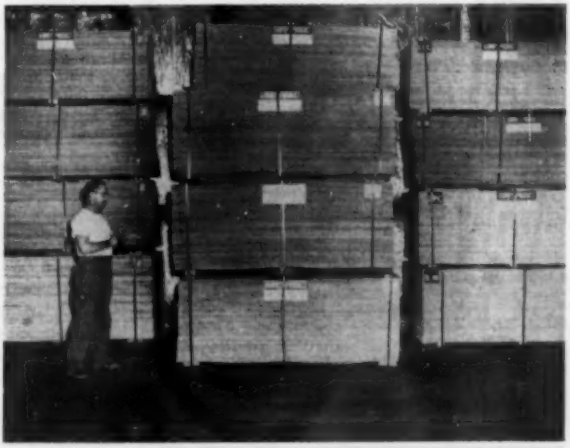
First we see birch logs carried from storage areas by giant overhead cranes.



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Here is paneling that has the genuine look of luxury and warmth—all the natural appearance of hardwood planking, along with lifetime beauty—that requires only dusting, no expensive upkeep or decorating . . . It's so expertly made, even the joints are undetectable.

Deacon's Prefinished Plywood comes in nine (9) of the finest selected hardwoods (all lacquer sealed, waxed and hand rubbed to satiny smoothness) in the handy size, 4 ft. wide x 8 ft. long x ¼ inch thick. **ANYONE CAN INSTALL!** Just nail to plaster or laths with ordinary brads. The edges are ½ inch V-grooved for PERFECT JOINTS.

Prefinished Plywood is bonded with urea resin under pressure and is protected against peeling, cracking or change of color. Comes in a choice of **BIRCH, MAPLE, MAHOGANY, RED OAK, WHITE OAK, SYCAMORE, WALNUT, CHERRY and LIMBO.** Also available ungrooved and unfinished.

Write for descriptive folder, stock and price list. All orders (irrespective of quantity) receive our prompt personal attention.

J. C. DEACON PLYWOOD Company
Since 1890

2627 SOUTH DAMEN AVE., CHICAGO 8, ILLINOIS
740 CROSSTOWN PARKWAY, KALAMAZOO, MICH.

The logs are lowered into hot ponds where they are "cooked." This softens the bark and helps prevent chipping when the logs are barked. After barking, the logs go on to the lathe. Here the thin veneer is peeled—for 1/24" to 1/28" thick, depending on log quality. Unused long lengths of logs, equal in diameter to the spindle, will be cut into 38" and 44" lengths which in turn will be peeled into veneers for cross bands.

The reels then move on to the drying machine. They are unwound and pass through the dryer on two levels. Inspectors grade the stock and cut the veneer to desired width. Imperfects are also cut out by this operator.

Fed through the spreader, veneer is coated on both sides with the adhesive. The blade then goes to the hydraulic hot press. Here heat and tons of pressure fuse layups into plywood. Panels are sanded, trimmed and are ready for shipment to door manufacturers.

These pictures and material have been made available to us through the cooperation of the American Cyanamid Company. A similar article has appeared in the company's publication, "Plastics Newsfront."

Jim happened to meet the minister on the street one day, and during the conversation told him of all the troubles he had had during the past year. He wound up with: "I tell you right now, preacher, it's enough to make a man lose his religion."

"Seems to me, Jim," the minister told him quietly, "it's enough to make a man use his religion."

VENEERS
SPLICED
VENEERS

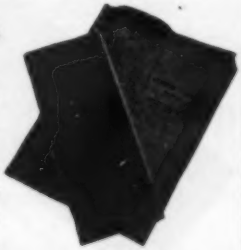
Every GOOD GRADE is here
Every GRADE here is GOOD

PLYWOOD
LUMBER

Phone, wire or write
Northern
Hardwood
Veneers, Inc.
Butternut, Wis.

CLICK'S VENEER TABLES

For Manufacturers, Dealers Anyone Who Works With VENEER, PLYWOOD, CUT LUMBER, BOXES, Etc.



A handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

Users tell us it pays for itself in a month in time saved and errors eliminated.

SEND FOR YOUR COPY TODAY

ONLY $10.00 POSTPAID

MRS. A. GRAHAM CLICK
Click's Veneer Tables
P.O. Box W-147 Elkin, North Carolina

CARRYING CASES

FOR SAFE HANDLING OF CIRCULAR SAWS

The Bel-Hil Saw Carrying Case will accommodate 5 to 7 saws. Comes complete with separators. Ruggedly built for years of service and available in sizes for saws of 8 inch to 24 inch diameters.

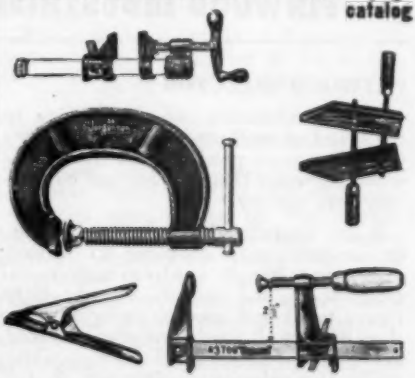
Send for free folder

BEL-HIL Products Co.
100 GROVE ST. WORCESTER, MASS.

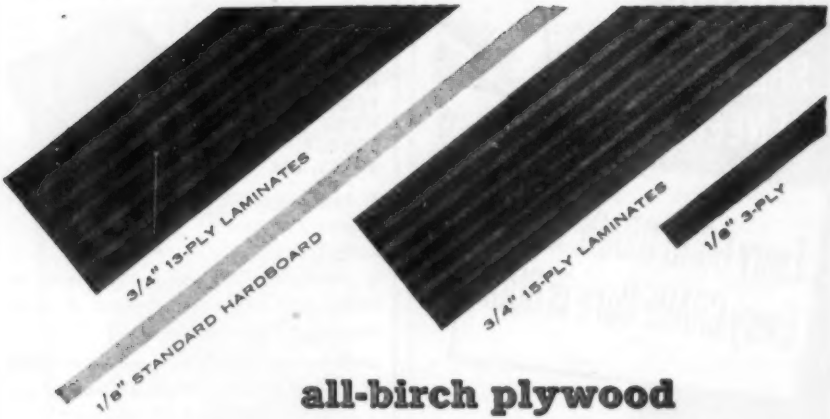
"Jorgensen" and "Pony" / CLAMPS

ASK YOUR SUPPLIER

write for free 32-page catalog



the clamp folks / ADJUSTABLE CLAMP CO.
418 N. Ashland Ave., Chicago 22, Ill.



all-birch plywood

From the world-famous forest resources of Finland, imported all-birch plywood—sizes up to 4′ x 6′, all thicknesses . . . cut to size to buyer's specifications. • All-birch ¾″ 13-ply or 15-ply laminates for cabinet doors, table tops, etc.; lumber core for table tops; door panels of birch plywood (⅛″ 3-ply). • Also standard hardboard, ⅛″ thickness, with an exceptionally hard surface. • *Dependable deliveries from Finland's oldest plywood source. Quotations submitted—your inquiries invited.*

FINWOOD INDUSTRIES INC. Station Plaza, Ramsey, N. J.

PLYWOOD SELECTOR

A comprehensive one-piece guide to the selection and use of hardwood plywood has been produced by the Hardwood Plywood Institute for use by jobbers and dealers.

It is a liberally-illustrated wall hanger, resembling a calendar in format, measuring 20 x 30 inches with metal strips at top and bottom. Twenty-eight figure types and species, covering more than 90% of all hardwood plywood sold, are reproduced in black-and-white, while the primary species are in full color.

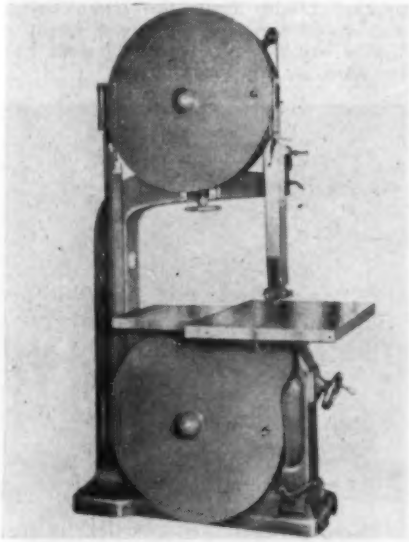
Highlights of the wall hanger is the color wheel of natural hardwoods, showing the color tones available in 34 different genuine hardwoods.

The wall hanger tells how to specify hardwood plywood, and contains information on grades, types, cores and a general price classification for each species and figure type.

The wall hanger is an aid for purchasing agents, architects, designers and retail salesmen who need pertinent information on hardwood plywood readily at hand. It is available through plywood jobbers, or from the Hardwood Plywood Institute, 600 South Michigan Avenue, Chicago 5, Illinois.

EQUIPMENT AND SUPPLIES for the WOODWORKING INDUSTRY

BAND SCROLL SAW



Rugged and compact design characterizes the new Model No. 950 30"-36" band scroll saw by the J. A. Fay & Egan Company. The high speed production saw is one of the new "900" series line being introduced by the Cincinnati, Ohio, manufacturer.

Up to 11,300 feet per minute saw travel is offered by the No. 950. A new, improved patented knife-edge straining device tensions the blade preventing its breakage at high speed.

The 36" machine will cut 35½" from blade to column and 21" under the guide. The 30" machine will cut 29½" from blade to column and 16" under the guide. The two sizes can be equipped with either a 600, 900 or 1200 r.p.m. motor in 2, 3, 5 or 7½ h.p. sizes.

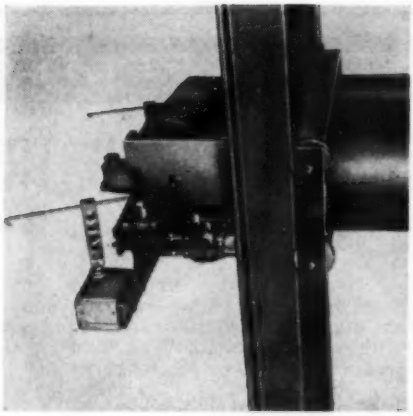
The aluminum disc wheels or Carter rigid steel disc wheels are dynamically balanced and concentrically mounted on tapered shafts. Wheel interchangeability is an exclusive feature. Steel spoked wheels can also be furnished. Non-friction, ball-bearing roller type guides are furnished above and below table.

Cast in one piece, the unusually heavy column of the finely balanced Model No. 950 assures unusually sturdy and vibrationless operation at wheel speeds as high as 1200 r.p.m. The seasoned and surface ground warp-proof table is tilted from the operator's position and furnished with a graduated index to indicate the exact angle.

For complete details and specifications: write, J. A. Fay & Egan Co., Dept. WD, Cincinnati 2, Ohio.

AUTOMATIC GLUE APPLICATOR

A new automatic production glue applicator with electro-magnetic controls has been placed on the market by Saranac Machine Company, Benton Harbor, Mich. First developed as a component to apply rigidly controlled lines of glue between corrugated fiberboard and wood cleats on a Saranac container-making machine, the glue applicator has demonstrated superior characteristics, according to the manufacturer, and is now available as a separate item.



Featuring a new type of rotary valve, the unit automatically meters and applies glue, in precisely controlled thin strips, onto parts or materials which pass beneath it on a conveyor. In operation, the leading edge of work material contacts a control lever extending from bottom of unit. Lever actuates a microswitch which energizes the solenoid that opens rotary glue valve. When trailing edge of work material reaches the control lever, the solenoid closes valve, instantly stopping the flow of glue.

Applicators are adjustable horizontally across work, for desired location of glue strips, and longitudinally, for starting or stopping glue flow where desired. Volume of glue flow is also adjustable to insure proper, economical application.

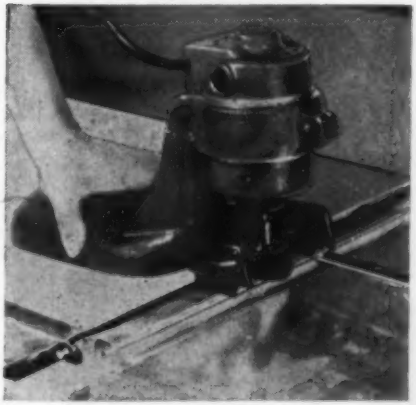
SLIDING DOOR POCKET FRAME

Grant Pulley & Hardware Corporation, 31-85 Whitestone Parkway, Flushing 54, New York, announces the new Grant No. 500 series packaged sliding door pocket frame.

The Grant No. 500 pocket frame is guaranteed to give years of trouble free service. It is equipped with Grant No. 7000 series hardware. Each No. 7000 carrier has four nylon ball-bearing rollers, mounted on pivoting rocker arms which provide constant wheel contact with track. Each door thus rides on eight wheels. Slipping or jumping is impossible. Doors of any thickness from ¾" to 1¾" may be accommodated. Any door height from 6'6" to 6'8" or door width from 2'0" to 3'0" may be used. The Grant No. 500 pocket will support a door weighing up to 100 lbs.

SHARPENER FOR JOINTER

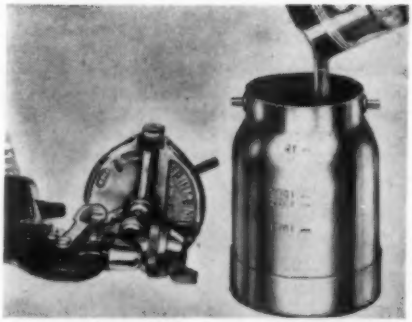
The Foster portable jointer blade sharpener can be used without removing blades from the head. Setup and down-time are reduced because blades are not removed. The tool can be used on any size jointer.



There are no intricate jigs or fixtures necessary with the sharpener, available from Foster Supplies Co., Dept. WD, 6122 N. Milwaukee Ave., Chicago, Ill. The sharpener slides over the table; has positive index stop and locking device. Amount of cut is determined by raising or lowering the table.

GRADUATED SIPHON CUP

The elimination of costly errors in paint reduction for spraying is predicted by the Binks Manufacturing Company, 3122 Carroll Ave., Chicago



12, Ill., for users of its new graduated siphon cups. The graduations are stamped into the cup, clearly visible on the inside and outside. The markings show fluid levels for ratios of 1-to-1, 2-to-1 and 3-to-1, as well as a mark for the one-quart level.

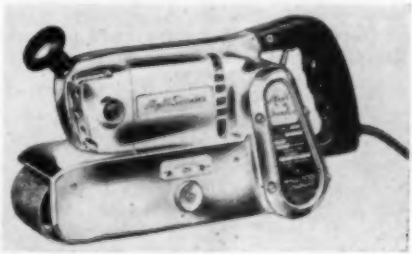
This new cup can be used with all makes of spray guns. Cup attachments are available for ¼" and ⅜" standard pipe thread fluid connections and for 9/16" 20 connections.

MALL SANDER

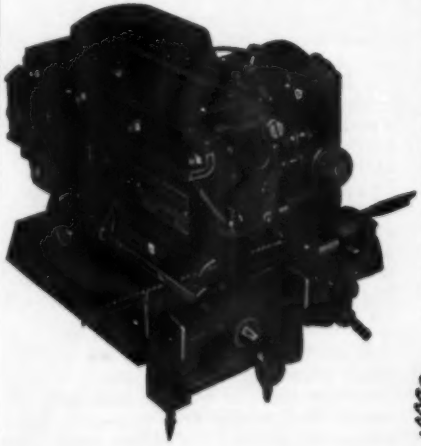
A new improved electric belt sander for faster, easier wood finishing has been designed by the Mall Tool Company, 7725 S. Chicago Ave., Chicago 19, Ill.

This new fast-action wood finisher produces satin-smooth surfaces on large panels, doors, sills, and tables. Also it is ideal for cabinet making, according to a company spokesman.

Improved ball bearings give this Model 31 belt sander smoother performance and added durability. Compactly designed and of streamline alu-



The Amazing Wardwell "K5"



Joints, Sets, Files BAND SAWS in One Operation

Exclusive joint—set—file operation sharpens 60 teeth a minute. Increases efficiency by from 30 to 50%.

Saw is firmly locked by solid steel cam when being filed and set. Absolute uniformity assured.

Another special and important time saving feature is that "K5" saves cost of a second operation.

"K5" is the choice of manufacturers everywhere. Send for descriptive literature.

WARDWELL MANUFACTURING CO.
3806 Ridge Rd., Cleve. 9, O.

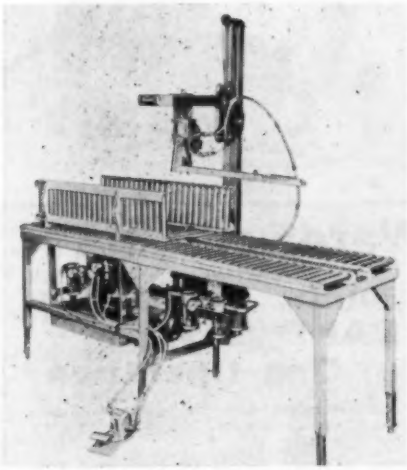
MAKER OF LARGEST LINE OF SAW AND TOOL SHARPENING MACHINES

minum alloy construction, it is light enough for easy maneuvering, yet heavy enough so that there is no need to "bear down" for effective sanding.

More outstanding features include: sealed ball bearings for protection against sawdust damage; a silent chain drive; a belt speed of 1350 feet per minute; a convenient safe toggle switch; U. L. Approved.

STAPLING MACHINE

This machine staples tops and bottoms simultaneously. After corrugated or fiber board boxes have been packed, the CSC-2 will staple cartons of any

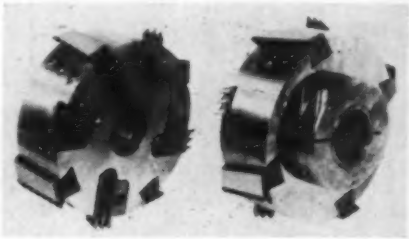


length and widths from 2" to 25" and heights from 2" to 26". The machine is equipped with two stapling heads, air operated with fully pneumatic controls. There are no electrical connections—no solenoids, relays nor microswitches. The machine is fully equipped with air filters, lubricators, regulators and gauges. The only connection necessary is a supply of compressed air at a minimum of 60 p.s.i.

Complete information is available from the Container Stapling Corporation, Dept. WD, Herrin, Illinois

NEW TENON HEADS WITH CARBIDE KNIVES

These new all-carbide tenon heads are cost cutters because they help eliminate "down-time" on tenoners—and do better work. A shear cut is provided by helical carbide knives.



The solid carbide spurs are adjustable and have a safety lock. The head is dynamically balanced for smooth running and has a self-centering and locking feature.

These all-carbide tenon knives and heads were developed and field tested by Marcoloy, Inc., Springdale, Conn.

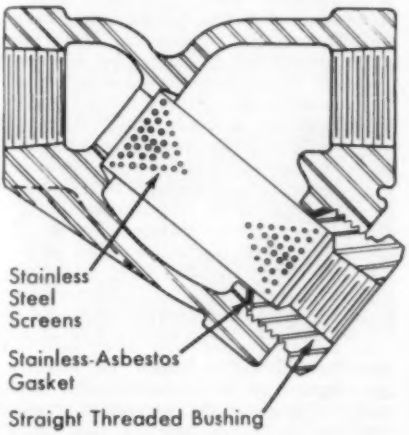
COUNT PLYWOOD SHEETS

Counting the number of plywood sheets in a stack has been made instantaneous and accurate using the new Ply Measure, a steel tape measure calibrated in the various standard plywood thicknesses, manufactured and marketed by Ply Measure Co., 525 Market Street, San Francisco 5, Calif. By catching the end of the measure at the top of a stack of plywood, the exact number of sheets in the stack is read off in proper thickness column at the bottom. Instructions for counting stacks up to 5′ in height are printed on the 10′ long steel tape.

With the appearance of an ordinary steel cased spring tape rule, the Ply Measure has the various standard plywood thicknesses and one-inch measurements printed on either side. Thus, one side is used to count ¼, ½, ⅜ and one-inch thick sheets; the other for ⅝, ¾ and one-inch sheets or measurements.

Y-TYPE PIPE STRAINERS

Armstrong Machine Works, Three Rivers, Michigan, has available 6 sizes of carbon moly steel strainers in addition to its present line of cast semi-steel strainers.



The new Y-type pipe strainers for oil, gas, air, water and steam lines are suitable for pressures to 900 lbs. and temperatures to 900°F. Maximum pressure at 100°F. is 1800 psig.

The strainers are available in ½" through 2" sizes, either screwed or socket weld. Sizes 1¼", 1½" and 2" have bolted retainer plates. Smaller sizes have straight thread screwed bushings.

Stainless steel screens are standard, either .045" diameter holes, 226 per sq. in. or 24 x 110 wire mesh. Other screening material is available to meet most requirements.

CAMERON OVERHEAD SWING

Here is a machine that eliminates the need for overhead track and trolley devices. With this equipment the operator can hold the router in a vertical position. There is no back-pull on the operator and no short circuits on small tables.

REES BURNERS

NO SKILL TO BUILD

No need to pay for high-priced labor when you buy a REES. Easy-to-handle, pre-formed sections bolt together to give fast, easy construction. If a section burns out, just unbolt it and install another. For low first cost, low maintenance, and superior whirlwind combustion, specify REES burners. Three factories and representatives in lumbering and woodworking centers from coast to coast.

SEND FOR CATALOG NO. 37E

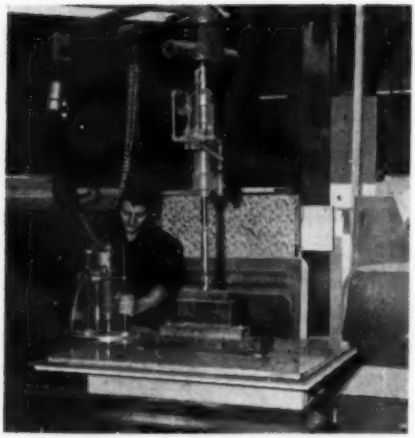
SINGLE WALL
Primarily for mills, supplied knock-down from 16' to 100' dia.

DOUBLE WALL
For woodworking plants, supplied knock-down from 16' to 61' dia.

REES BLOW PIPE MFG. CO., Inc.
2929 Fifth Street, Berkeley 10, Calif.

REES BURNERS, Ltd.
1331 W. 6th Ave., Vancouver, BC, Canada

REES BURNER & BLOWPIPE CO.
P. O. Box 225 • Memphis, Tennessee



In addition, the Cameron overhead swing is incorporated with an air cylinder that holds the template and work securely in place while the operator shapes the table or other parts. The machine illustrated has two swings, one for 220 volts and the other one for 110 volts. Most plants use only one arm.

Complete information is available from Cameron Carbide Tool Co., P.O. Box 142, Clinton, Mass.

GRANITE BOARD

A remarkable, new core material, Granite Board, for plastic laminates and plywood, is now being distributed by Aetna Plywood & Veneer Company. This multi-purpcse core material is said to possess dimensional stability, maximum strength equally in all directions and to have bonding facility, bonding strength and workability in every direction on any surface.

Because Granite Board is dimensionally stable, it is claimed, cross-banding is eliminated. Face and edge veneers are glued directly to the core material. Both faces of Granite Board are smoothly sanded and are perfectly parallel. The material veneers beautifully, without telegraphing, and is easily worked without danger of warping, swelling, grain raising or checking. Granite Board works with ordinary high-speed steel or carbide-tipped equipment, with approximately the same wear as ordinary plywood. It can be routed, planed, sanded in any direction, on any surface, with uniform results and it can be nailed very close to the edge without splitting.

A folder giving complete information on Granite Board is available on request, without obligation. Write Aetna Plywood & Veneer Company, 1737 North Elston Avenue, Chicago 22, Illinois.

GRAINING MACHINES

Roto Finishing Systems, 1501 S. Alameda Ave., Compton, Calif., offers several graining machines for use on hardboard.

The smallest—a one-purpose machine—was especially developed for the plastic table top industry, for match

At Left:
E-30 OSCILLATING EDGE SANDER WITH TILTING TABLE

At Right:
BA-600 TWO-SPINDLE AIR OPERATED BORER. 1" TO 7½" CENTERS

OTHER SANDERS AND BORERS TO CHOOSE FROM

SEE YOUR MACHINERY DEALER OR WRITE DIRECT TO—

NEWTON MFG. CO. Temple, Texas

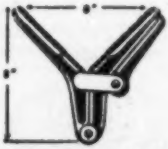
graining the edges of plastic covered tables. The machine is compact and easily portable; is driven by a 1/3 h.p. motor; has a printing roller of Neoprene 6" wide by 6" in diameter; engraved cylinder, 5" in diameter; and a Neoprene feeding belt built into machine.

The model H 50 Standard horizontal 50" graining machine has been developed for standard 48" flat stock. It is designed as a bench model, readily adaptable to an existing production line.

Model H. V. (Horizontal, Vertical) operates in either vertical or horizontal position. It has an endless conveyor belt feeding drive the full width of the printing surface. Can accommodate either fully assembled cabinets or flat stock in thicknesses up to 5". It has a standard 6" diameter printing roller; either composition or Neoprene. Machine is adaptable for either 6" or 9" engraved cylinder.

"Business is never so healthy as when, like a chicken, it must do a certain amount of scratching for what it gets."
—Henry Ford

FASTER • TOUGHER • TROUBLE FREE!
SUPREME BAND SAWS
SUPREME BAND SAWS cut faster . . . have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness . . to stay sharp! There is a Supreme Band Saw for every industry . . . for every material. Special purpose saws are made to order.
Quick Service REPAIR & RENEW CARBIDE-TIPPED CUTTERS
SEND US YOUR CARBIDE-TIPPED KNIVES, CUTTERS, ROUTER BITS
We will promptly repair, retip and sharpen your Carbide-Tipped tools and get them back to you without delay. Skilled workmen and precision equipment insure fast service and complete satisfaction in restoring cutting efficiency.
PROMPT... DEPENDABLE SERVICE
THE SAW & KNIFE SPECIALTY CO., INC.
6576 CARNEGIE AVENUE • CLEVELAND 3, OHIO

"HARTFORD" CLAMPS

No. 62 Mitre: Planed off jaws with hardened steel pins just long enough to hold work.

Style 18: Adjustable tail piece. Has many uses in furniture, boat and body plants. Also for welders.
Hand Screws: Hard seasoned maple jaws. Extra heavy steel ferrules.

32 Clamp Styles Available
Write for free catalog Today.
The HARTFORD CLAMP COMPANY EAST HARTFORD, CONN. Est. 1915

Carter
-IZE with band saw accessories used as standard equipment by leading band saw manufacturers.
• Rigid Band Saw Wheels
• Band Saw Tires
• Micro-Guides
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CARTER PRODUCTS CO. INC.
423 Wm. Alden Smith Bldg.
30 Ionia Avenue, S.W.
GRAND RAPIDS 2, MICHIGAN

EVERY DAY from
COAST to COAST
DODD'S
Dovetailer Bits
are proving their
Superiority
Clean cuts — longer life under continuous hard use is exactly what you can expect when you use Dodds Dovetail Bits.
Precision made of special carbon steel — each Dodds Bit individually hand finished by expert craftsmen — your guarantee of the finest in bits.
There is a Dodds Dovetail Bit for every size dovetail. Immediate delivery from stock. Special bits made to order. We have a complete Dovetail Bit service.
Makers of the world renowned Dodds Dovetailers
ALEXANDER DODDS COMPANY
451-453 MONROE AVE. N. W. GRAND RAPIDS 2, MICH.

CLOSED-CIRCUIT TV SYSTEM

Closed-circuit TV installations in the woodworking field can be remote controlled, to provide operator safety in hazardous locations, assure undetected operation in security and surveillance work, and permit quick and accurate viewing of widely spaced objectives.

This is reported by Dage Television Division, Thompson Products, Inc., Michigan City, Ind., manufacturer of closed-circuit television equipment, which announced development of a unique remote control TV system.

Called the "285-A Servo System," it includes a multi-lens TV camera which is entirely directed by a separate monitor-console. Simply by turning an appropriate knob on the console, any function of the TV camera can be achieved.

Lenses on the camera are changed, focusing is set, and the camera is directed up or down, right or left, all by remote control.

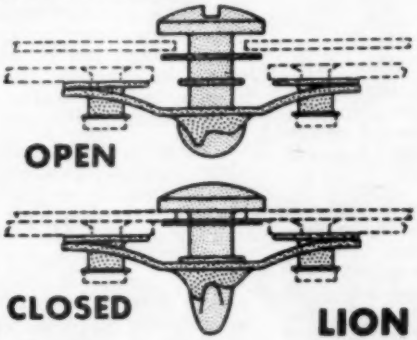
A built-in "memory" in the control console also makes it possible to automatically point the camera in up to three different "pre-set" directions simply by pushing a button.

These "pre-set" positions, which may be readily changed to meet varying observational tasks, greatly facilitate

repeated viewing of more than one area of operation.

Dage's "285-A Servo System" and its accessories are described in a detailed brochure available free of charge from Dept. MJ, Dage Television Division, Thompson Products, Inc., Michigan City, Ind.

POSITIVE LOCKING FASTENER



LION NO. 2

Lightweight, low cost, positive locking is provided by fast-acting quarter-turn Lion fasteners which can be opened and closed repeatedly.

Designed to hold plastic or plywood sheets pressure tight, Lion fasteners withstand shock, vibration and extreme stress. They are thus ideally suited for fastening maintenance and inspection panels on aircraft, trucks, buses, electronic equipment, air conditioning units, and for countless other rugged jobs.

Among the easiest-to-use fastening devices ever designed, Lion Fasteners lock with a quick quarter turn clockwise. Reverse action unlocks. Patented full-floating leaf spring assures quick access with complete safety. They can not be partially or incorrectly locked, nor can they be over-torqued.

Complete information from Southco Div., Dept. WD, South Chester Corp., 200 Industrial Highway, Lester, Pa.

LAMINATING EQUIPMENT

A decision to offer its patented equipment for postforming and laminating decorative plastics to cabinet shops and other plastic fabricators, has been announced by Trinity Industries. The California firm is credited with being one of the pioneer developers of fully formed (coved) plastic drainboards, counter and table tops.

Simplified equipment and operating procedures, with a resultant lowering of original equipment cost to less than one-half that quoted for other types of machines, is said to be the standout feature of Trinity's product. It was given the 1955 A.P.A. outstanding achievement award.

Tops can be given an inside or "bullnose" outside radius in three minutes, and surface lamination is accomplished in only eight minutes, the manufacturers claim. Radii can be varied from ¾" to 2" on tops of any length to ten feet.

Self-contained, the Trinity equipment package requires only 220-volt operating power and elementary multi-purpose power tools for complete fabrication of coved tops. Integral units in-

clude a 12' infra-red heating unit and oven, machined steel forming press, and 54" x 126" multi-purpose laminator heat blanket.

Full details and literature are available from Postforming Division, Trinity Industries, P.O. Box 71, Redwood City, California.

ASHBY ELECTED TO HEAD HARDWOODS ASSOCIATION

William F. Ashby, president of the Ashby Veneer & Lumber Company, Jackson, Tennessee, was elected president of the Fine Hardwoods Association at the annual meeting.

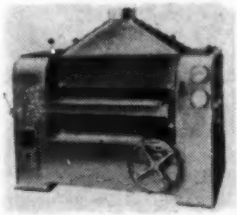
Other new officers elected for the coming year are T. J. Connelly, president of the Dean Company, Chicago, who was elected vice-president, and George F. Wilhelm, vice-president of R. S. Bacon Veneer Company, Chicago, who was elected treasurer. Burdett Green was re-elected executive vice-president and secretary of this association made up of the nation's leading hardwood veneer and lumber manufacturers.

A continuing and expanded educational program on hardwoods and their superiority for various uses was approved by the membership. Included in the program will be sales training aids for use by manufacturers and retailers in the furniture, TV, hi-fi and general woodworking fields; materials for classroom use in schools and colleges, and various materials planned to give the homemaker a greater appreciation for hardwoods.

Consumers will be reached through advertising and publicity, and through various booklets and films distributed direct and through stores and women's club groups.

Take it from Walter P. Chrysler: "The reason many people never get anywhere in life is because, when opportunity knocks, they are out in the back yard looking for four-leaf clovers."

FOR A PERFECT SANDING JOB ON EVEN THE SHORTEST PIECES



THE SUPREME ENDLESS BED SANDER

Priced within the reach of every shop, the Supreme Endless Bed Sander offers every advantage of more expensive machines, including a self-oscillating mechanism perfectly synchronized with the rotation of the drums. The automatic expanding action of the spiral drums keeps the sandpaper properly tightened. These and many more new and improved features are available in two drum models 25", 40" and 50" and three drum models 40" and 50" wide; belt or motor driven.

Write for complete details

SUPREME WOODWORKING MACHINERY CORP.

50-52 Howard St. New York 13, N.Y.

NEW!

MARCOLOY CARBIDE DOVETAIL BITS

Eliminate "down time" on your dovetailers with carbide bits. A perfect cut gives you a perfect match. Write for catalog and prices.

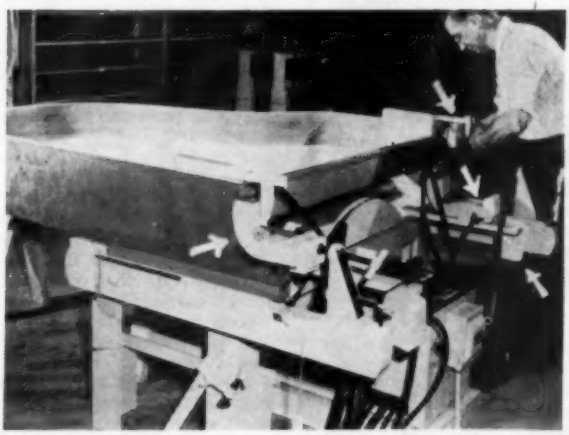
MARCOLOY CARBIDE ROUTER BITS

Improved design is 5-ways better. New low prices. Write for folder.

MARCOLOY CARBIDES

MARCOLOY, INC.
Springdale, Conn.

NEW RESISTANCE HEATERS SPEED VENEER GLUING AT STEINWAY



Joseph Stroppel, foreman at Steinway & Sons, Long Island City, N.Y., demonstrates how their new resistance heaters save time, labor and floor space. Photo shows veneering jig built by Steinway craftsmen. At lower right is custom-built Washburn transformer and cables. Arrows point to wood pressure blocks faced with stainless steel heating elements. Not shown are two long, heated pressure blocks for veneering the top edge of the piano rim.

A urea resin glue is used, providing a longer assembly time and a more durable bond than the animal glue formerly used. The heaters cure the bond in less than a minute, and only one clamping jig is required instead of four.

The simple, low cost equipment uses low voltages so there is no danger to employees of shocks or electrical burns. Complete heating equipment, including transformer, cables and heater strips, is made by Washburn Electric Co., 202 Sherwood Pl., Englewood, N. J.

BAKELITE BOOKLET

A new, revised, "1956 Condensed Reference File of Bakelite Plastics and Resins" presents the latest information about properties and uses of these materials supplied by Bakelite Company, a Division of Union Carbide and Carbon Corporation.

This 12-page booklet summarizes technical data about the wide range of special and general-purpose Bakelite phenolic, vinyl, styrene, polyethylene, fluorothene, polyester, silicone and epoxy plastics and resins, and Krene film and sheeting. More than 50 plastics and resins are described under the headings: Molding Materials, Extrusion Materials, Laminating Plastics, Bonding Materials, Vinyl Calendering Materials, Protective Coating Resins, Flexible Packaging, Flexible Film and Sheeting, and Plastic Rigid Sheets.

Copies of the "1956 Condensed Reference File of Bakelite Plastics and Resins" are available to business firms who send requests to Bakelite Company, a Division of Union Carbide and Carbon Corporation, 300 Madison Ave., New York 17, N.Y.

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Rock Hard
WATER PUTTY
WILL NOT SHRINK
STICKS AND STAYS PUT
HERE'S WHAT YOU NEED FOR QUALITY PRODUCTION DESPITE POOR LUMBER
DURHAM ROCK HARD
ALL-AROUND REPAIR CHAMP
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Send request on your letterhead for liberal sample free. No obligation.
WOOD WORKERS SAY: "Durham's Rock-Hard Water Putty covers up Nature's mistakes as well as our own. It handles beautifully — finishes smooth as velvet."
Durham's Water Putty has great strength and adhesion. This modern plastic fills knotholes or cracks, replaces chips, fills and smooths off edges of plywood, etc. Absolutely does not shrink. Comes in 25, 50 and 100-pound drums in powder form — keeps indefinitely. Mix with water as needed. Send now for free sample and prices.
Donald Durham Co.
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The PLASTIC Repair Material in POWDER Form

RESEARCH ROAD CHARTED

How to get the most out of America's forests, in new and improved wood products - without reducing the nation's wood supply - lies in eight broad fields that are "ripe for research and development" according to a new booklet just issued by Timber Engineering Company, affiliate of the National Lumber Manufacturers Association, and the wood industries' research service agency.

The colorful, 20-page book, "Guideposts to Wood Markets", charts the road of research that offers new and profitable products for the wood industries. Emphasized are potential outlets for forest materials traditionally left in the woods to decay, or used as fuel in mill and plant boilers.

The potentialities of wood particle board, laminating small pieces into big ones, new seasoning methods and treatments and better techniques for grading and testing are discussed.

Copies of "Guideposts to Wood Markets" are available from the Timber Engineering Company, 1319 18th St., N.W., Washington 6, D.C.

A psychologist visiting a kindergarten class sought to test the kiddies on the keenness of their powers of observation. "How many ears has a cat?" she asked.

"Two!" the youngsters shouted.

"And how many eyes?" "Two!"

"How many feet?" "Four!"

By this time little Nancy was getting tired of what her more sophisticated mind regarded as useless questioning, so when the visitor next asked, "How many tails has a cat?" she piped up: "Doodness, ain't you never seed a tat?"

A youthful figure is something you get when you ask a woman her age.

RATES: $7.50 for name, address and a 5-line advertisement. Additional lines 75c. Display Advertising: 1" (minimum) $8.50; 3" (maximum) $25.00. Quarter pages and half pages available at regular space rates. Write for details. Closing date, 15th of month preceding publication.

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P.O. Box 230 **Asheville, N.C.**

Air Compressors, various sizes
Band Saws, Amer. 42", Belted MD
Band Saw, Greenlee No. 410, 36" bb, dmd
Band Saw, New Delta 20" bb-dmd
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Blowers, Garden City 55"
Borer, Andrews 3 spindle vertical bed
Borer, J. Superior 2 spdle. horiz. M.D.
Borers, Greenlee No. 369—5' DMD
Borer, W&M 283-B, bb dmd, single spindle
Boring & Sawing, McKnight 26F dmd
Carvers, Y-A, and Porter BB, DMD
Clamps, Handy No. 71 revolving
Clamps, Taylor cat. 30 sec.
Clippers, Cae 88" bed and motor
Dovetailers, Dodds, 20 spindle
Dowel Driver, Bell No. 8
Dowel Mach. Bell bd. & motor
Frequency changers, 30 KW
Glue Jointer, Jenkins No. 343A bb-dmd
Glue Spreaders, 12" Black Bros. dmd
Jointers, Glue, Yates-American No. 213 bb-dmd
Jointers, New Moak 12" bb-dmd
Jointers, Porter 16" and 24" bb-dmd
Jointers, Yates No. 199, 12" bb. v-belt drive
Kiln Trucks, 4' & 6' roller bearing
Lathe, Yates No. 74 bb-dmd
Mortiser, Sidney, single-spindle pb. bd.
Mortiser, New Britain No. 7 bd. & motor
Mortiser, W&M No. 283—5 spindle Horiz. dmd
Moulders, Yates-American C33, 8" bb-dmd
Moulders, Yates-American C-39—6" bb-dmd
Planer: Whitney 30" Sgl. BB, dmd
Planers, F&E—30" double, pb. bd & motors
Planers, Berlin 36" round head dmd
Planers, New Crescent 24" bb-dmd
Planers, Buss, 44, 30" sgl. bb, dmd.
Planer, F&E No. 156 36x7 dmd. round head
Planer-Matcher, Yates A1-15"x6" round heads, pb. bd.
Redrier, Merritt 12 plate 36x72
Routers, Onsrud, Air 20M speed
Routers, Defiance single spindle high speed dmd
Sanders, Indiana Mdg. bb. dmd.
Sander, Yates No. 430, semi-stroke, bb-dmd
Sander, Yates No. 431—42" 3 drum endless dmd
Sanders, Niagara brush, bb-dmd
Sander, 48" double disc, dmd
Sanders, F&E 60" 3-drum roll feed, dmd
Sanders, McKnight single drum 24"x16" dmd
Sander, W&M No. 171 belt bb., m.d.
Saws, Hermance 200G Gang Rip, dd. dmd.
Saws, Mattison No. 207, bb. dmd.
Saws, F. & E. No. 530, bb., dmd.
Saws, Beach dbl. cutoff, bb. & motor
Saws, Greenlee No. 493, variety, bb-dmd
Saws, Hermance Gang Rip, pb & motor
Saws, New Delta-Crescent 12" tilting arbor dmd
Saws, New Multiplex 40A & 50A
Saws, Porter C-42, cutoff, bb-dmd. & tables
Shapers: Onsrud No. 200 Sgl. bb. dmd.
Shaper, Defiance double spindle, bb-dmd
Shaper, Whitney No. 329, double bb-dmd
Shapers, New Moak single spindle bb-dmd
Shapers, Greenlee No. 180 double bb-dmd
Shaper, Whitney double spindle, bb-dmd
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Taping Machines, Dennis No. 2
Tenon Heads, single and double end
Tenoner, Hayes 6 ft. dbl. with copes. pb., bd. & motor
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Band saw, Oliver heavy, 36 in., $185
Blowers, Shaving 40 and 50 in., $100 ea.
Borer, Bell gang, double end, dowel, $300
Clamp carrier; Billstrom 30 sec., $350
Jointer, Cordesman 12 in., $135
Lathe, American 20 in., Wood, $75
Mortiser & Borer, American horiz., 5 hp, HC MD, $300
Planer, 30 in. Yates, B-2, Dbl. M.D., $800
Planer, Single, 18" to 24", $175 and up
Radial saw, Multiplex 5 HP., 3 ph. $300
Ripsaw, 24 in. gang and 15 HP mtr., $350
Router, Heavy duty, 3 HP, BB, $250
Sander, Wysong Miles No. 171, hand block, $100
Sander, Wysong, edge belt, $100
Sander, belt, American 14 in. drawer, $150
Saw sharpener, Rogers circular, $75
Cutoff saw, Egan swing, $60
Variety saw, heavy duty, with jointer, MD., $175
Variety saw, heavy, tilting arbor, Fairbanks, $175
Numerous other machines

FOR SALE

L. R. Kenner
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Borer, 48" Bell No. 295 horiz. multiple head, late type and practically new.
Case Clamp, revolving Union 60" air operated.
Grinder, Wisconsin Model "K" Cutter, late type and practically new.
Moulder, 8" Mattison No. 229 Electric, NEW.
Router, Ekstrom-Carlson No. 327, 5 h.p.
Sander, 48" Smith No. 404 end. bed, BB, M.D.

FOR SALE

Clifton Machinery Co.
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Saw Dust and Shavings Mill Exhausters and Blowers—Hundreds in stock, sizes to suit any need. Also Air Compressors, Fans, Rotary Blowers, Money Savers—Send specifications.

All machines rebuilt and fully guaranteed.

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Outputs: 90-100-120 and 180 cycle
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E. E. Coe Lathe 36"x42" capacity.

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Wilkin Chalcner, B.B. Electric, rebuilt, located central Indiana.

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Weldon Flinchbaugh Electronic Glue Press with hydraulic side and top pressure - 100" x 42" - 15 K.W. RCA generator with all the transformers - glue spreader, two layup tables - in excellent condition.

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No. 145 Mereen Johnson 50x5¼ Wheel Horizontal, only **$1000.00**
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Mortisers, Chain, New Britain No. 2 & 7
Moulders, Y-A No. C3A-4", B.B. M.D.
Moulders, American No. 22, 14"
Planers, Powermatic 12" & 16", New
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Planer, Double Berlin No. 185-30x8", M.D.
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Radial Saws, Walker-Turner, 3 H.P.
Rip Saw, Roll Feed, H. & B., No. 223, M.D.
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We are not dealers, but manufacturers with a fine group of surplus machines in good condition for sale.

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Black Brothers No. 22-D-26" Roll Sprdr. and Coater with variable speed motor, used less than 100 hours. Forty per cent (40%) off of new price. Also One Chicago Machinery Exchange Jointer, No. 16 in good working condition and equipped with 3 horsepower, 3 phase, 220 V motor.

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Complete Exhaust System; 1—25 hp Blwr.; 1—Large Cyclone Unit w/canopy w/ several hundred feet of exhaust piping

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Fall River 5-7883

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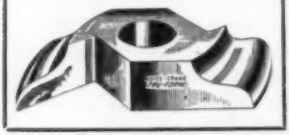

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Childs 2"x4" Electric Moulder
Fay & Egan No. 209 ball bearing moulder
Fay & Egan No. 376—9", ball bearing
Hermance No. 50—8" Four Side, ball bearing
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American Single Surf. No. 41-24", ball bearing
Fay & Egan No. 140 double
SHAPERS—Smith Single Spindle, plain bearing
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Fay & Egan No. 186—42" ball bearing resaw
Egan No. 36 60" Resaw
Fay & Egan No. 950—36"
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Send us your inquiries as we have many others, too numerous to mention.

ERIC RIEBLING CO.
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Builders of special air operated machine for inserting T moldings on dinette tops.

FURNITURE LEGS

Completely finished, turned, ferrules and hanger bolts attached to your specs. Superb quality at competitive prices. Quantities only.

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25 hp. Alden Gang Ripper
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Yates G-2 Straight Line Ripper
Marschkie Vonnegut Brush Sander (dble.)
Cutterheads, New and Used
Electric Motors (Used)

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Large stock of all kinds of European and Canadian woodworking machines for furniture makers, for saw mills and for turning work. Very attractive prices, references all over the United States and Canada. Write for catalogue.

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12' Capital Slicer
12' Capital Grinder
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16' Veneer Saw
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Derrick Power
6' Band Mill only with filing equipment and new saws

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30" ball bearing round head M.D. Jointer with a Smith feeder.
Dependable 10" all electric moulder, 4 sides, 3 yrs. old.
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No. 244 Mattison Cut-off saw, M.D. and 10' table.
Buess Tilting Table Variety Saw
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Doig Corrugator machine—St. Joe Stapler

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Experienced estimator by established mill specializing in architectural woodwork. Must be competent and reliable. Give full particulars as to age, experience, availability and salary expected.

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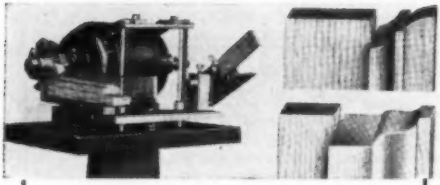

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Marcoley, Inc., page 168, Folder.

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Diehl No. 89 Tapeless Splicer, dmd.
Dennis Taping Machine, M.D.
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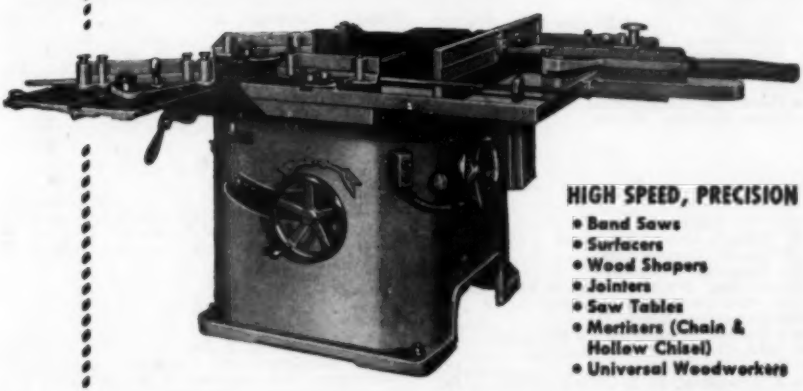
No. 4 VARIETY SAW
Tilting Arbor Type

Arranged with both rolling table and extended table



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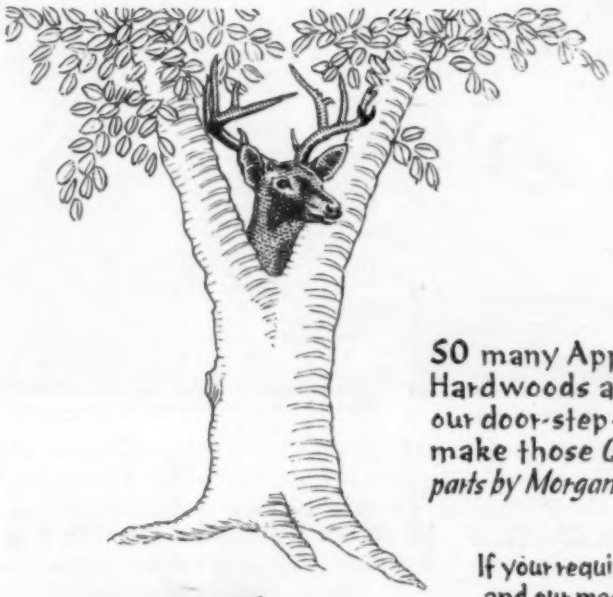

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HANDLE MORE BOARD FEET PER DAY with LEITELT LUMBER LIFTS

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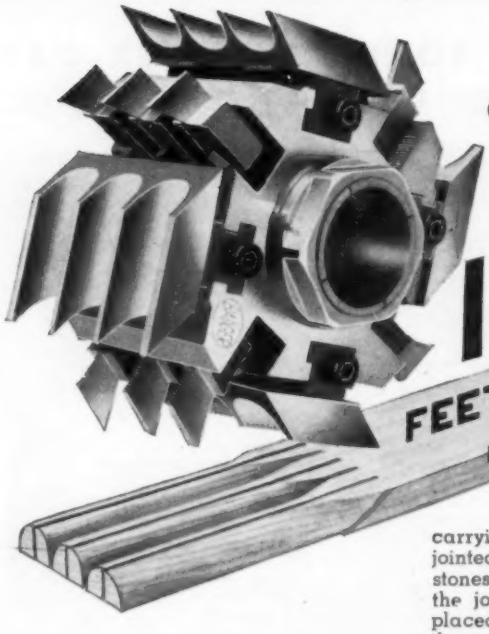

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FEET OF BASE SHOE

PER EIGHT HOUR DAY!

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BADGER *Engineers to the Woodworking Industry!*

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FOR FASTER, LOWER COST NAILING AND PINNING

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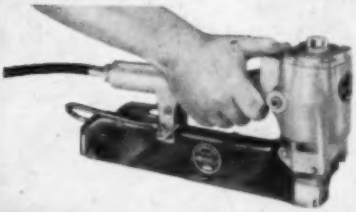
Dependable pneumatic Spotnailer drives heavy guage staples or pins in lengths up to 1¼ inches at high speed.



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SPECIAL SHORT MODEL—MALLET DRIVE

Spotnailers speed up those "impossible" jobs. Extended nose fits hard-to-get-at corners.

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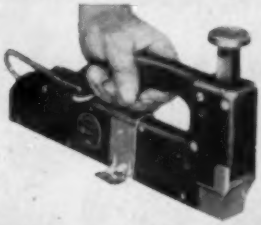
STANDARD MALLET DRIVE SPOTNAILERS

Extremely dependable, medium duty machine widely used for fastening millwork, floor underlayment, etc.



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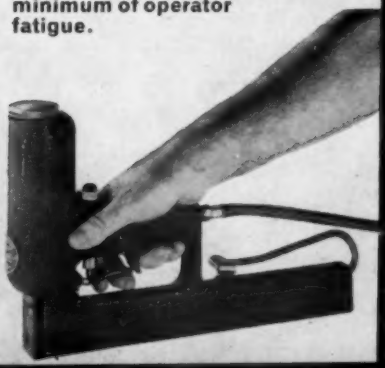
For driving longer heavy-gauge staples and pins. Magazine holds up to 200 fasteners.

MODEL P

HIGH VELOCITY—AIR DRIVE

Well balanced tool speeds fastening operations with a minimum of operator fatigue.



Your Spotnail Man can help you solve tough fastening problems. Call him now.

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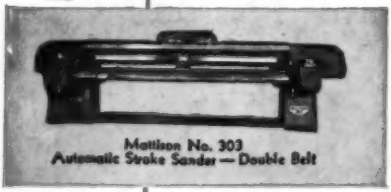
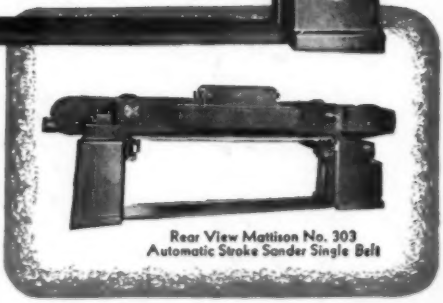
EVANSTON 1, ILLINOIS

MATTISON'S NEW
No. 303 Automatic STROKE SANDER

Front View Mattison No. 303 Automatic Stroke Sander — Single Belt



Mattison No. 303 Automatic Stroke Sander — Double Belt



Rear View Mattison No. 303 Automatic Stroke Sander Single Belt

● The Mattison No. 303 Automatic Stroke Sander is the last word in modern engineering. From the standpoint of design — construction — smoothness of operation and appearance, it is in a class by itself. Results that can be expected are faster output, better quality of work, and trouble free operation. These important features are all to your advantage. Hydraulic system for operation of shoe is simple yet positive in action, providing smooth operation of sanding shoe the entire length of stroke. Belt speeds to meet your needs. All controls are within easy reach of operator. The sand belt is completely enclosed at top and both ends for dust control and safety. Belts are easily and quickly changed. Aluminum sanding shoe is mounted on ball bearings for easy operation and control. Massive base and column construction provide solid foundation. The Mattison No .303 Automatic Stroke Sander is recommended as the most efficient method for finish sanding large, flat surfaces such as tops, panels, doors, etc. It provides perfect work on a real production basis. Double-belt model with coarse belt for removing tape and glue, and fine belt for finish sanding, speeds up production by reducing handling time and, in many cases, eliminates drum sander operation.

Send for complete information on the 303, the latest in stroke sanders.

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